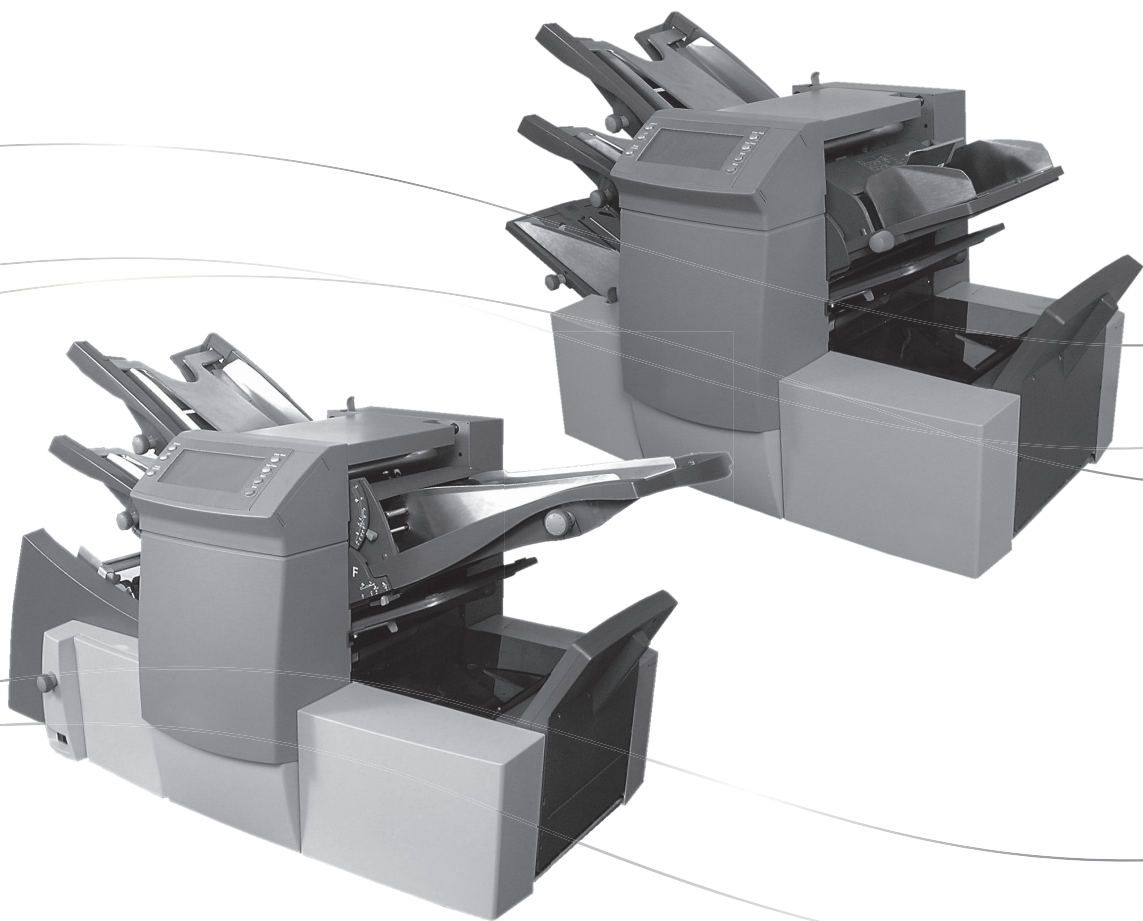




# **DI380/DI425 Series**

## **Document Inserting Systems**

(Includes Secap models SI3300/SI3500)



# **Service Manual**

FORM SDT333A (4-06)

**IMPORTANT:**

Model and feature availability varies by country. Contact your machine supplier for more information.

This guide covers all models and features. Inclusion within this guide does not guarantee availability of a particular model or feature within your country.

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# 1 • Introduction

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## 1.1 PURPOSE

This document provides the information necessary to support the installation and site repair of the DI380/DI425/SI3300/SI3500 Inserter.

## 1.2 EQUIPMENT COVERED

This manual applies to the sheet feeder, its accessory equipment and the interface kits required for table top system operation.

## 1.3 RELATED PUBLICATIONS

SDC639	DI380 Operating Guide	English
SDC640	DI380 Operating Guide	German
SDC641	DI380 Operating Guide	Italian
SDC642	DI380 Operating Guide	Dutch
SDC643	DI380 Operating Guide	Norwegian
SDC644	DI380 Operating Guide	Finnish
SDC645	DI380 Operating Guide	Swedish
SDC646	DI380 Operating Guide	Danish
SDC647	DI380 Operating Guide	Hungarian
SDC648	DI380 Operating Guide	Portuguese
SDC649	DI380 Operating Guide	Spanish
SDC650	DI380 Operating Guide	French (Pitney Bowes Branded)
SDC1069	DI380 Operating Guide	French (Secap Groupe PB Branded)
SDC651	DI380 Operating Guide	Polish
SDC730	DI380 Operating Guide	Czech
SDC652	DI425 Operating Guide	English
SDC653	DI425 Operating Guide	German
SDC654	DI425 Operating Guide	Italian
SDC655	DI425 Operating Guide	Dutch
SDC656	DI425 Operating Guide	Norwegian
SDC657	DI425 Operating Guide	Finnish
SDC658	DI425 Operating Guide	Swedish
SDC659	DI425 Operating Guide	Danish
SDC660	DI425 Operating Guide	Hungarian
SDC661	DI425 Operating Guide	Portuguese
SDC662	DI425 Operating Guide	Spanish
SDC663	DI425 Operating Guide	French (Pitney Bowes Branded)
SDC1078	DI425 Operating Guide	French (Secap Groupe PB Branded)
SDC664	DI425 Operating Guide	Polish
SDC731	DI425 Operating Guide	Czech
SDC1070	SI3300 Operating Guide	Italian
SDC1071	SI3300 Operating Guide	Dutch
SDC1072	SI3300 Operating Guide	English
SDC1073	SI3300 Operating Guide	Danish
SDC1074	SI3300 Operating Guide	French
SDC1075	SI3300 Operating Guide	German
SDC1076	SI3300 Operating Guide	Spanish
SDC1077	SI3300 Operating Guide	German (Hefter Branded)

# 1 • Introduction

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SDC1079	SI3300 Operating Guide	Italian
SDC1080	SI3300 Operating Guide	Dutch
SDC1081	SI3300 Operating Guide	English
SDC1082	SI3300 Operating Guide	Danish
SDC1083	SI3300 Operating Guide	French
SDC1084	SI3300 Operating Guide	German
SDC1085	SI3300 Operating Guide	Spanish
SDC1086	SI3300 Operating Guide	German (Hefter Branded)
SDT334	DI380/DI425/SI3300/SI3500 Parts List	

## 1.4 CONTENTS

This manual is organised as follows:

- Section 1 – Introduces the manual
- Section 2 – Lists material and equipment specifications
- Section 3 – Briefly presents the theory of operation
- Section 4 – Presents removal and replacement procedures
- Section 5 – Gives adjustment procedures
- Section 6 – Offers information on the OMR system
- Section 7 – Lists troubleshooting procedures
- Section 7 – Covers preventive maintenance
- Section 8 – Provides installation, setup and check-out instructions
- Section 9 – Contains schematics and other diagrams

## 1.5 SAFETY SUMMARY

Warning messages are used throughout this manual to alert you to potentially hazardous conditions. These warnings are explained below.

- **WARNING** — calls attention to improper practices that could cause injury.
- **CAUTION** — calls attention to improper practices that could damage the equipment or the material being run.
- **IMPORTANT** — calls attention to practices that could adversely affect equipment operation, if instructions are not followed exactly.

You must familiarise yourself with proper procedures and methods before you install, operate or service the equipment to avoid personal injury or damage to the equipment. If you are responsible for training service personnel or equipment operators, it is incumbent on you to explain safety precautions to your students and encourage safety awareness.

The following is a list of general precautions which cannot be over emphasised:

- HIGH VOLTAGE is present at certain points in the equipment. INJURY or DEATH could result if you fail to observe safety precautions.
- Know how to turn off power in the work area and how to summon help in case of emergency.
- Do not work on equipment under power unless absolutely necessary.

- When working on a live circuit, use extreme caution. Don't grasp two sides of a live circuit at the same time.
- Always use the right tools for the job.
- Treat every circuit like a gun which may be loaded. It may not be "live", but be sure. Check with a neon tester, a voltmeter, or simply unplug the machine.
- Use one hand when reaching into a circuit. By keeping one hand free, lethal current is less likely to pass through vital organs. Observe this rule when connecting or disconnecting plugs or leads, and when making any adjustments on a live circuit. Don't underestimate the danger of shock: 1mA (1/1000 ampere) is uncomfortable; 5 mA (1/200 ampere) is dangerous - the victim may jump back and be injured; 12 mA (1/83 ampere) causes hand muscles to contract - the victim cannot free himself; 24 mA (1/40 ampere) has proven fatal; and 100 mA (1/10 ampere) is likely to be fatal.
- Don't reach into a circuit with metal tools, or while wearing rings or a watch. Even in low voltage circuits, a metal object can short circuit two terminals.
- Don't bypass safety devices. Three-wire outlets (220/240 VAC) are designed to ground equipment to make it safe. If a live wire shorts to a grounded frame, the only result is an open fuse. If a live wire shorts to an ungrounded frame, the frame itself becomes hot and potentially dangerous. A fuse is a weak link in a circuit, designed to break down before anything else does. The maximum safe current in a circuit is determined by the designers. Too large a fuse can pass excessive current, damaging expensive equipment. Interlock switches are designed to remove power from a circuit when an access door, cover or panel is opened. When such a switch is "cheated" or otherwise disabled, a safety device has been bypassed. **If you bypass an interlock for service or diagnostic purposes, use extreme caution.**
- If you use air pressure to clean a machine, use low pressure (30 psi or less) and use eye protection (goggles or face masks).
- When using solvents or cleaning fluids, make sure ventilation is adequate.

### WARNING!



Always be sure the equipment is unplugged before you make any attempt to perform the maintenance outlined in this manual. If you must work on a "live" machine, note that line potential is present at the power panel and the motherboard.

**CAUTION: DO NOT** attempt to adjust key timing parameters in the service menu unless you have been trained and thoroughly understand what you're doing. Otherwise you could damage the equipment.

# 1 • Introduction

---

## 1.6 EQUIPMENT SAFETY

Just by walking around, you yourself may carry a threat to the equipment, in the form of a high voltage electrostatic charge. Your body acts as a giant capacitor which can store large amounts of electricity. Walking across a rug can charge you with several thousand volts, which can discharge in a spark up to an inch long.

Digital equipment can be easily damaged or destroyed by static charges. Microprocessors and other ICs contain tiny transistors not much more than a millionth of an inch across, which operate at 5 to 12 volts. You don't have to see a spark to ruin an IC — 50 volts is enough. Follow these guidelines to protect sensitive equipment from static damage:

- Ground yourself before reaching into the equipment, or touching any circuit board or other electrical component. Just touching a doorknob or metal workbench may be enough, but the best guarantee is to turn the machine off but leave it plugged in, and ground yourself on the chassis, which is grounded through the three-wire power cord. If you have access to one, bring a grounding strap and use it.
- Be careful of rugs — even a few steps can recharge you. Re-ground yourself whenever you've walked away and returned to the machine. Rugs are a major source of static buildup in the body.
- Take greater precautions as the objects you handle get smaller. A board in the machine is better protected than one which is not plugged in; a chip on a board is better protected than one in your hand.
- Stay away from metal conductors. The plastic and resin that chips and boards are made of are much better insulators than metal. It's most important to keep your hands away from any metal which contacts the data. In particular, this means the long connector along the bottom of each board, and the pins coming out of the chips. These signal and data lines are directly connected to the fragile inner circuits of the chips. When handling a board, try not to touch the connector; when handling a chip, try not to touch the pins.

## 2 • Specifications

### 2.1 MATERIAL SPECIFICATIONS

#### Sheet Feeders

<b>Minimum sheet size:</b>	127mm Width	127mm Length
<b>Maximum sheet size:</b>	229mm Width	406mm Length
<b>Paper weights:</b>	60g/m <sup>2</sup> Minimum (non OMR) 70g/m <sup>2</sup> Minimum (OMR)	120g/m <sup>2</sup> Maximum
<b>Fold configurations:</b>	<b>Material length limits before folding</b>	
	Single fold:	127mm - 315mm
	"C" - Letter fold:	150mm - 356mm
	"Z" - Accordion fold:	201mm - 356mm
	Double fold:	305mm - 406mm

#### Double Document

<b>Detector Material range:</b>	60g/m <sup>2</sup> (16 lb) Min	120g/m <sup>2</sup> (32 lb) Max
---------------------------------	--------------------------------	---------------------------------

<b>Feed tray capacity:</b>	DI380/SI3300 - Up to a maximum of 325 sheets of 80g/m <sup>2</sup> DI425/SI3500 - Up to a maximum of 325 sheets of 80g/m <sup>2</sup>
----------------------------	--

<b>Manual Feed Mode:</b>	Stapled sets up to 5 sheets of 80g/m <sup>2</sup> to a maximum total weight of 400g/m <sup>2</sup> per set can be processed in the Manual Feed Mode. <b>Only Sheet Feeder number 1 (plus the Insert Feeder if required), can be used for Manual Feed applications.</b> The maximum compressed thickness after folding should not exceed 2mm. Glossy/coated sheets are not recommended.
--------------------------	--

#### Fold Type and Overall Thickness Limits

The table below shows the maximum number of sheets that can be accumulated or collated for each fold type, based on different weights of paper.

**It is important that jobs exceeding these maximums are NOT programmed into the machine or imposed by OMR code printing and/or OMR selective feed.**

Number of sheets	Paper Weights in g/m <sup>2</sup>		
	60-80	81-100	101-120
1	C,Z,S,D	C,Z,S,D	C,Z,S,D
2	C,Z,S,D	C,Z,S,D	C,Z,S
3	C,Z,S,D	C,Z,S	C,Z,S
4	C,Z,S	C,Z,S	
5	C,Z,S		

Fold Types:  
C = C Fold,  
Z = Z Fold,  
S = Single Fold,  
D = Double Fold

The sheet limits above can be used with 1 additional sheet from the Supplementary Feeder plus 1 Insert, only if the total Mail Piece contents are up to a maximum of 2mm total compressed thickness.

**For SINGLE Fold ONLY** using 60-75g/m<sup>2</sup> paper ONLY, up to 10 items can be placed into an envelope. This 10 item maximum INCLUDES any additional sheet from the Supplementary Feeder and/or Insert. The overall maximum compressed thickness of 2mm still applies.

## 2 • Specifications

---

### Insert Feeder

<b>Minimum Insert size:</b>	127mm Width	82mm Length
<b>Maximum Insert size:</b>	230mm Width	152mm Length
<b>Paper Weights:</b>	75g/m <sup>2</sup> Minimum (non-folded cut sheet) 180g/m <sup>2</sup> Maximum (Single Sheet) 60g/m <sup>2</sup> Minimum (folded material) And Inserts of up to a maximum compressed thickness of 2mm.	

Pre-folded or single panel Inserts should be fed from the Insert Feeder.

### Double Document

<b>Detector Material range:</b>	60g/m <sup>2</sup> Minimum	120g/m <sup>2</sup> Maximum
<b>Feed tray capacity:</b>	DI380/SI3300 - Up to a maximum of 100 Inserts DI425/SI3500 - Up to a maximum of 300 Inserts	

### Sealer

The machine can seal up to a maximum of 1200 envelopes between refills.

### Stacker

The envelope Stacker can accommodate up to 150 filled envelopes. (Dependent on size and contents of the envelope).

### Material Requirements

For best performance, use only materials approved by Pitney Bowes.

Materials should be good quality and properly stored.

Recommended storage conditions: 18°C (65°F) to 25°C (77°F)  
40% to 60% relative humidity



## 2 • Specifications

### Envelope Feeder

**Minimum envelope size:**

88mm Depth  
220mm Width

**Maximum envelope size:**

164mm Depth  
242mm Width

**Envelope weights:**

65g/m<sup>2</sup> Minimum  
100g/m<sup>2</sup> Maximum

**Envelope tray capacity:**

DI380/SI3300 - Up to a maximum of 100 90g/m<sup>2</sup> envelopes  
DI425/SI3500 - Up to a maximum of 300 90g/m<sup>2</sup> envelopes

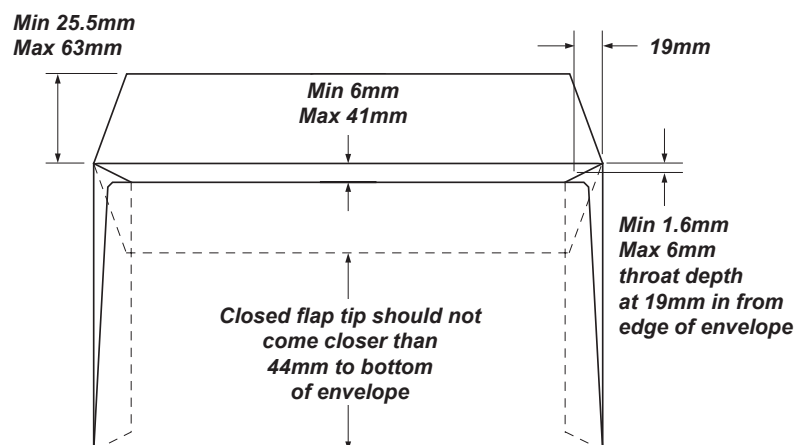
**End Clearance:**

End clearance between the Insert and envelope is a minimum of 6mm at each side i.e. a minimum of 12mm overall. This measurement should be taken with all Mail Piece contents placed into the envelope.

**Depth Clearance:**

The Mail Piece Contents must allow a minimum clearance of 3mm for unfolded inserts, and 6mm for folded material, below the flap crease after being fully inserted into the envelope.

**Envelope flap and throat requirements:**



ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT  
NOTIFICATION AND ARE SUBJECT TO TEST

## 2 • Specifications

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### 2.2 MACHINE SPECIFICATIONS


Physical Dimensions	DI380/SI3300	DI425/SI3500
Length	773mm	1043mm
Depth	568mm	568mm
Height	525mm	525mm
Weight	55kg	65kg

Weight will depend on machine configuration. Weights stated do not include material.

<b>Noise Level</b>	
Running	73dBA

<b>Electrical</b>	230VAC, 50Hz, 3A or 110VAC, 60Hz, 6A
-------------------	---

<b>Maximum Speed</b>	DI380/SI3300 - Up to a maximum of 3,000 cycles per hour DI425/SI3500 - Up to a maximum of 3,500 cycles per hour Depending on model, fold type and material quality.
----------------------	---

<b>Compliance</b>		It is certified that the Folding/Inserting machine complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC. The product was tested in a typical configuration.
-------------------	--	---

For a formal Declaration of Conformity please contact Compliance Engineering on +44 (0)1279 426731.

**ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT  
NOTIFICATION AND ARE SUBJECT TO TEST**

# 3 • Theory of Operation

---

**Note:**

Before any job commences, it is assumed that all the appropriate trays are filled to complete the sequences described below.

**Please refer to relevant diagrams in Section 10- Diagrams**

## 3.1 INTRODUCTION TO SYSTEM THEORY

The DI380/SI3300 and DI425/SI3500 are low volume easy to use Folding/Inserting machines, each available in 3 variants (1, 2 and 3 station machines).

The sheet feeder(s) have self centring guides and automatic separation based on photo copier technology. Therefore the documents do not require shingling before they are presented to the separator roller and pad. The sheet feeders have a sprung lift plate that lifts the weight of the documents up to the separator roller to ensure only a single document is fed.

The insert feeder has a more traditional type of separation, by means of a manual height adjustment and a stone/shield setting that is operator settable. This is to enable diverse material to be processed through the insert feeder.

The envelope feeder will automatically separate a stack of envelopes to ensure only a single envelope is fed. The separator height is set by the engineer.

When the Start button is pressed, a single sheet is fed into the paper path and driven into fold plate 1. When the sheet reaches the deflector stop, the paper is buckled. This buckled edge is then pulled through fold rollers 2 and 3 which creates the first fold. It then enters fold plate 2 until it reaches the deflector stop, where the sheet is buckled again. The edge is pulled into fold rollers 3 and 4, creating the second fold. At this stage, if an insert is programmed as part of the job, the insert will 'fire' into the waiting document.

The envelopes are fed flaps up and trailing through the flapper unit where the envelope flap is peeled away from the body of the envelope. The envelope then passes through to the Q station area where it is stopped. The flap of the envelope is held back by the brush. The envelope is opened when the flipper fingers press down on the back of the envelope and four insertion fingers enter the envelope throat.

The folded sheet (package) at fold rollers 3 and 4, travels through the transport plate rollers and is driven into the waiting envelope by the insert drive rollers. Once the insert fully enters the envelope, the Q station fingers lift up and the package then travels along to the sealer rollers where moisture is applied to the envelope flap. The body of the envelope is forced up into the inverter stop, this in turn forces the envelope back into the nip of the sealer rollers and presses the flap against the body of the envelope.

The envelope activates the exit switch as it passes the exit rollers and increments the counter by one.

## 3 • Theory of Operation

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### 3.2 SINGLE SHEET FEEDER MODE & LINKED FEEDER MODE

When the start button is pressed, the sheet feeder motor (M1) is switched on. This feeds a sheet over the Double Document Detector (DDD1) sensor and stops it, after a counted delay, in the collation nip. This results in the sheet being slightly over driven.

At the same time, the envelope motor (M9) is switched on and an envelope is fed through the separator pad and roller. When the lead edge of the envelope moves forward to the envelope sensor (S1), the software sends the signal to turn on the collation motor (M5). The transported envelope stops in the insertion area at a predetermined time according to the size of envelope programmed within the job setup.

The insertion solenoid (L1) energizes, followed by the hold down solenoid (L2), and finally, by the shoe horn solenoid (L3).

The next sheet fed from the sheet feeder is triggered by the previous sheet fed entering the fold plate 2 sensor OP14. When the folded sheet enters onto the pivot plate, this moves the flag out of sensor (OP5). When the folded sheet is fully inserted, the pivot plate moves backwards returning the flag to its home position.

This operation triggers the software to energize the finger solenoid (L4), lifting the fingers and lifting the brush of the sealer by energizing solenoid (L5). It will then de-energize the hold down solenoid (L2), insertion solenoid (L1), and the shoe horn solenoid (L3).

The envelope is then driven from the insertion area into the sealer area. The next envelope is fed when the lead edge of the envelope pushes the moistener sensor (S3) forward (the software will increment by a count of 1 for the EIU). The envelope then enters the inverter area and finally exits into the stacker.

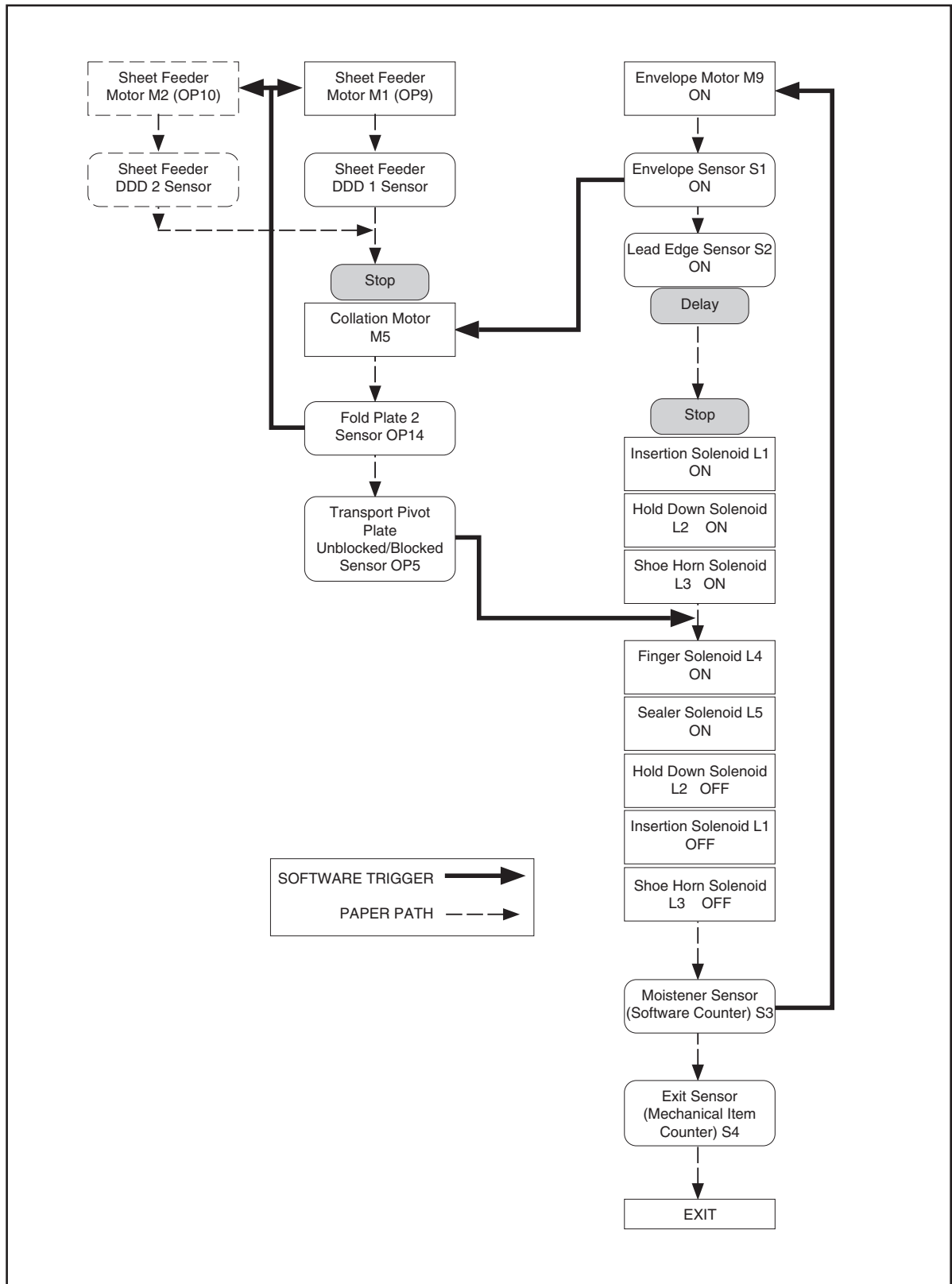
The exit sensor (S4) will increment the mechanical counter (located behind the manual advance knob door) by 1.

In normal run mode, if no material has been detected at the Double Document Detection sensor, the sheet feeder motor (M1) will time-out after approximately 2 seconds. This is to clean the separator roller and pad. In 'daily mail' (manual feed) mode, this time is increased to approximately 20 seconds for operator loading. The manual feed lever opens the gap between the separator roll and pad.

In switchable mode, the software will activate sheet feeder 2 automatically if the tray empty sensor (OP9) detects that no paper is present in sheet feeder 1 when the document has entered fold plate 2 (OP14).

The software will then switch back to running sheet feeder 1 when the sheet feeder 2 tray empty sensor (OP10) detects that no paper is present in sheet feeder 2 when the document has entered fold plate 2 (OP14).

This sequence is shown in flow chart form on the following page.



**Flow Diagram - Single Sheet Feeder Mode**

## 3 • Theory of Operation

---

### 3.3 INSERT FEEDER MODE

When the start button is pressed, two motors control the transport of the insert. The insert pre-feeder motor (M3) is energized and feeds a single insert past the Double Document Detection (DDD3) sensor. If a double is detected, the machine will stop and the double insert symbol will be indicated on the control panel. If no double is detected, the insert will continue to the insert collation area and stop.

At the same time, the envelope motor (M9) is energized. An envelope is fed through the separator pad and roller.

The transported envelope will stop in the insertion area at a predetermined time according to the size of envelope programmed within the job setup.

The insertion solenoid (L1) energizes, followed by the hold down solenoid (L2), and finally, by the shoe horn solenoid (L3).

When the shoe horn solenoid is energized, the software sends a signal to operate the insert collation motor (M4). This will trigger the next insert to be fed into the collation insert area.

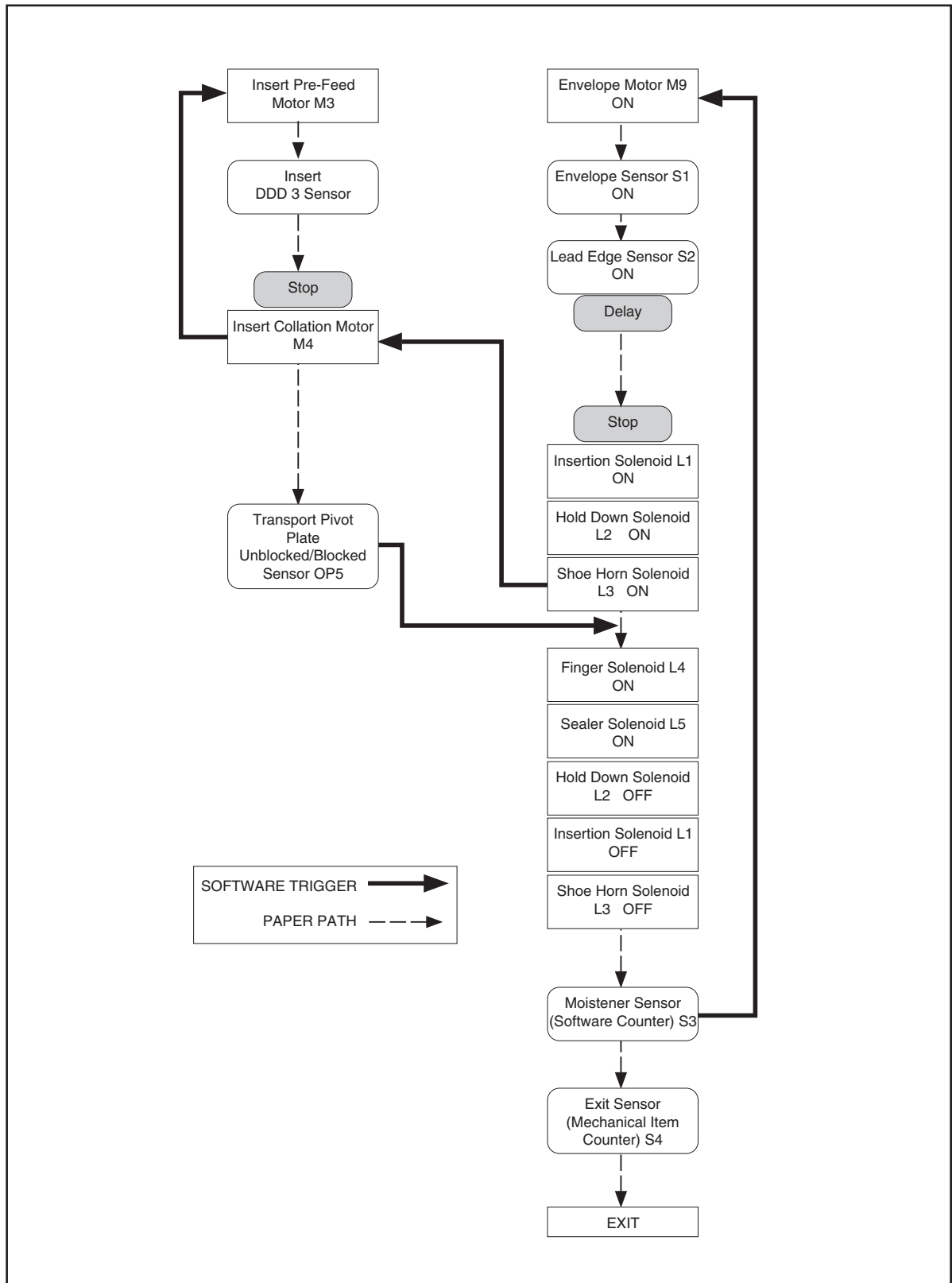
When the insert enters onto the pivot plate, this moves the flag out of sensor (OP5). When the insert is fully inserted, the pivot plate moves backwards returning the flag to its home position.

This operation triggers the software to energize the finger solenoid (L4), lifting the fingers and lifting the brush of the sealer by energizing solenoid (L5). It will then de-energize the hold down solenoid (L2), insertion solenoid (L1), and the shoe horn solenoid (L3).

The envelope will then be driven from the insertion area into the sealer area. The next envelope will be fed when the lead edge of the envelope pushes the moistener sensor (S3) forward (the software will increment by a count of 1 for the EIU). The envelope will then enter the inverter area and then exit into the stacker.

The exit sensor (S4) will increment the mechanical counter (located behind the manual advance knob door) by 1.

This sequence is shown in flow chart form on the following page.



**Flow Diagram - Insert Feeder Mode**

## 3 • Theory of Operation

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### 3.4 TWO SHEET FEEDER MODE

When the start button is pressed, the sheet feeder motor (M1) is switched on. This feeds a sheet over the Double Document Detector (DDD1) sensor. This triggers sheet feeder motor (M2) to feed a sheet up to the Double Document Detector (DDD2). Both sheets stop, after a counted delay, in the collation nip. This results in the sheets being slightly over driven.

At the same time, the envelope motor (M9) is switched on and an envelope is fed through the separator pad and roller. When the lead edge of the envelope moves forward to the envelope sensor (S1), the software sends the signal to turn on the collation motor (M5). The transported envelope will stop in the insertion area at a predetermined time according to the size of envelope programmed within the job setup.

The insertion solenoid (L1) energizes, followed by the hold down solenoid (L2), and finally, by the shoe horn solenoid (L3).

The next sheet fed from the sheet feeder 1 is triggered by the previous sheet fed entering the fold plate 2 sensor OP14. When the folded sheet enters onto the pivot plate, this moves the flag out of sensor (OP5). When the folded sheet is fully inserted, the pivot plate moves backwards returning the flag to its home position.

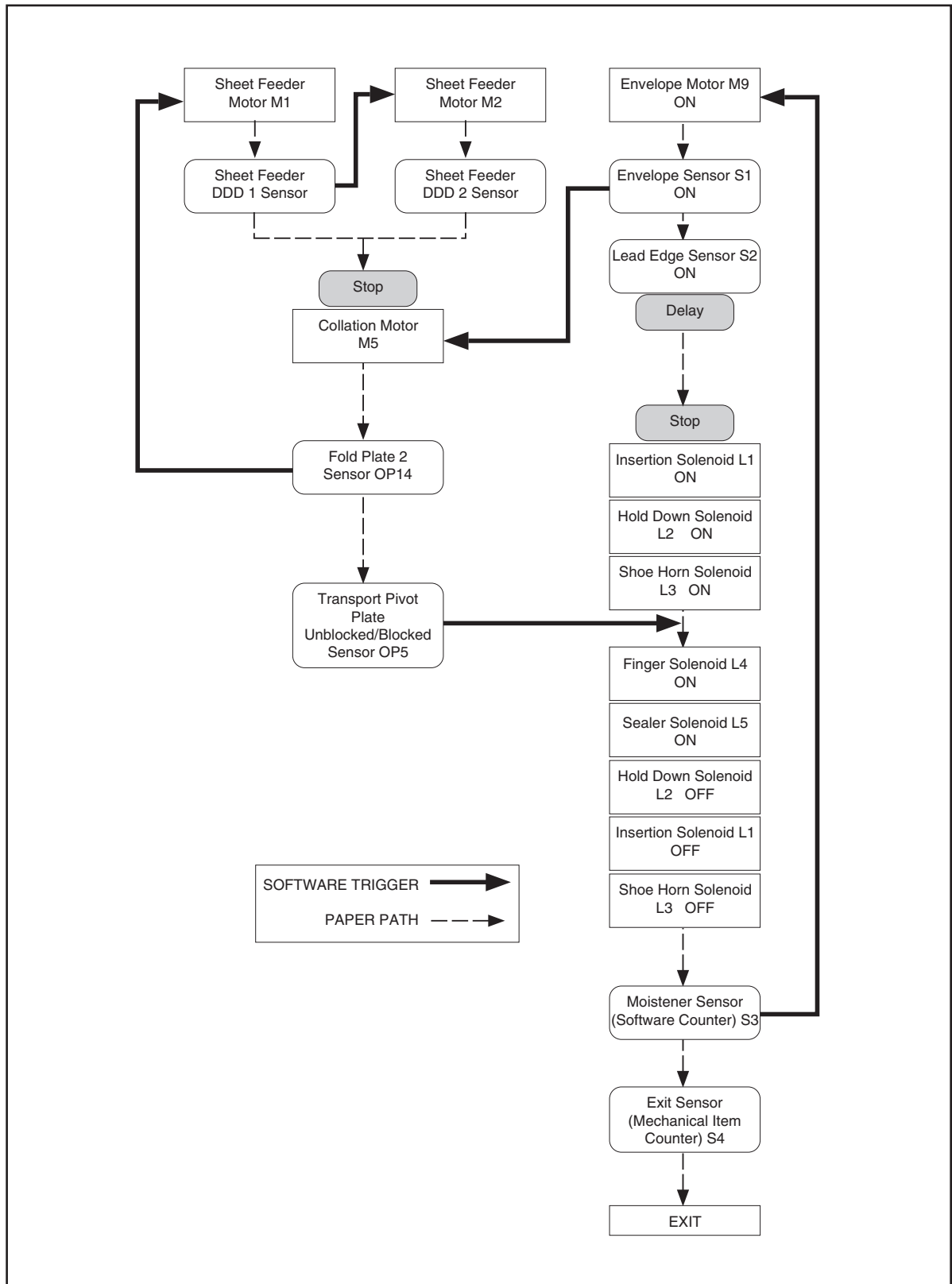
This operation triggers the software to energize the finger solenoid (L4), lifting the fingers and lifting the brush of the sealer by energizing solenoid (L5). It will then de-energize the hold down solenoid (L2), insertion solenoid (L1), and the shoe horn solenoid (L3).

The envelope is then driven from the insertion area into the sealer area. The next envelope is fed when the lead edge of the envelope pushes the moistener sensor (S3) forward (the software will increment by a count of 1 for the EIU). The envelope then enters the inverter area and finally exits into the stacker.

The exit sensor (S4) will increment the mechanical counter (located behind the manual advance knob door) by 1.

This sequence is shown in flow chart form on the following page.





**Flow Diagram - Two Sheet Feeder Mode**

## 3 • Theory of Operation

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### 3.5 SINGLE SHEET FEEDER PLUS AN INSERT MODE

When the start button is pressed two motors control the transport of the insert. The insert pre-feeder motor (M3) is energized and feeds a single insert past the Double Document Detection (DDD3) sensor. If a double is detected, the machine will stop and the double insert symbol will be indicated on the control panel. If no double is detected, the insert will continue to the insert collation area and stop.

The sheet feeder motor (M1) triggered by the insert passing through the Double Document Detection and feeds the sheet over the Double Document Detector (DDD1) sensor and stops after a counted delay in the collation nip. This will result in the sheet being slightly over driven.

At the same time the envelope motor (M9) is energized. An envelope is fed through the separator pad and roller.

When the lead edge of the envelope moves forward to the envelope sensor (S1), the software sends the signal to energize the collation motor (M5) to switch on. The transported envelope will stop in the insertion area at a predetermined time according to the size of the envelope programmed within the job setup.

The insertion solenoid (L1) energizes, followed by the hold down solenoid (L2), and finally, by the shoe horn solenoid (L3).

When the sheet enters fold plate 2, covering sensor OP14, the software switches on the insert motor (M4) after a timed delay. This delay is the "nesting constant" set in the parameter screen.

The next insert is fed after the first insert is nested into the folded sheet.

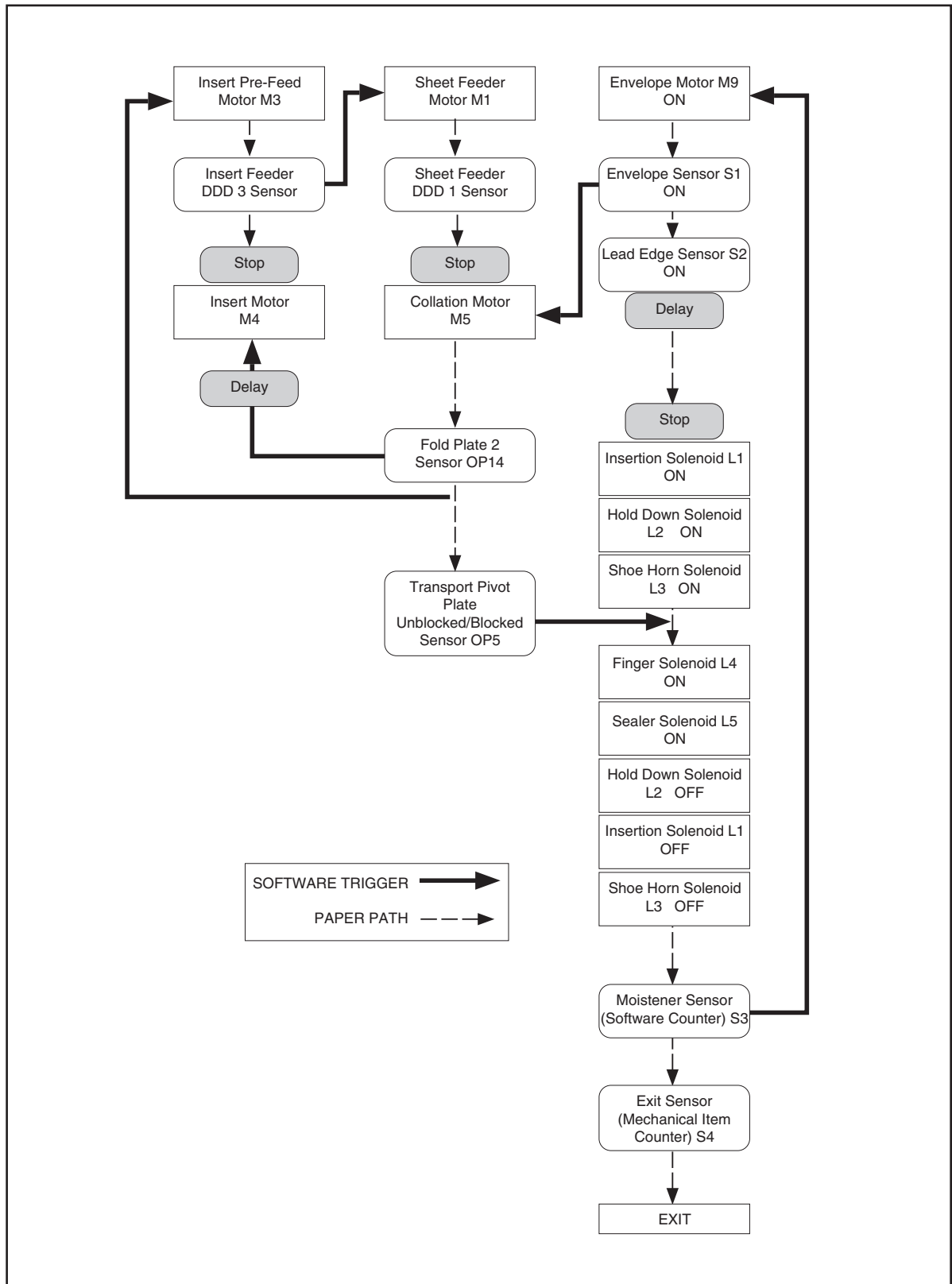
When the folded sheet and insert enter onto the pivot plate, this moves the flag out of sensor (OP5). When the insert is fully inserted, the pivot plate moves backwards returning the flag to its home position.

This operation triggers the software to energize the finger solenoid (L4), lifting the fingers and lifting the brush of the sealer by energizing solenoid (L5). It will then de-energize the hold down solenoid (L2), insertion solenoid (L1), and the shoe horn solenoid (L3).

The envelope is then driven from the insertion area into the sealer area. The next envelope is fed when the lead edge of the envelope pushes the moistener sensor (S3) forward (the software will increment by a count of 1 for the EIU). The envelope then enters the inverter area and finally exits into the stacker.

The exit sensor (S4) will increment the mechanical counter (located behind the manual advance knob door) by 1.

This sequence is shown in flow chart form on the following page.



**Flow Diagram - Single Sheet Feeder Plus an Insert Mode**

## 3 • Theory of Operation

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### 3.6 TWO SHEET FEEDERS PLUS AN INSERT MODE

When the start button is pressed. The insert pre-feeder motor (M3) is energized and feeds a single insert past the Double Document Detection (DDD3) sensor. If a double is detected, the machine will stop and the double insert symbol will be indicated on the control panel. If no double is detected, motor (M4) will energize and will feed the insert into the insert collation area and stop.

The sheet feeder motor (M1) is triggered by the insert passing through the Double Document Detection (DDD3), feeds the sheet over the Double Document Detector (DDD1). The Double Document Detector (DDD1) triggers sheet feeder motor (M2) to feed the sheet through the Double Document Detector (DDD2), both sheets stop, after a counted delay, in the collation nip. This will result in the sheets being slightly over driven.

At the same time, the envelope motor (M9) is energized. An envelope is fed through the separator pad and roller.

When the lead edge of the envelope moves forward to the envelope sensor (S1), the software sends the signal to energize the collation motor (M5).

The transported envelope will stop in the insertion area at a predetermined time according to the size of envelope programmed within the job setup.

The insertion solenoid (L1) energizes, followed by the hold down solenoid (L2), and finally, by the shoe horn solenoid (L3).

When the sheet enters fold plate 2, covering sensor OP14, the software switches on the insert motor (M4) after a timed delay. This delay is the "nesting constant" set in the parameter screen.

The next insert is fed after the first insert is nested into the folded sheets.

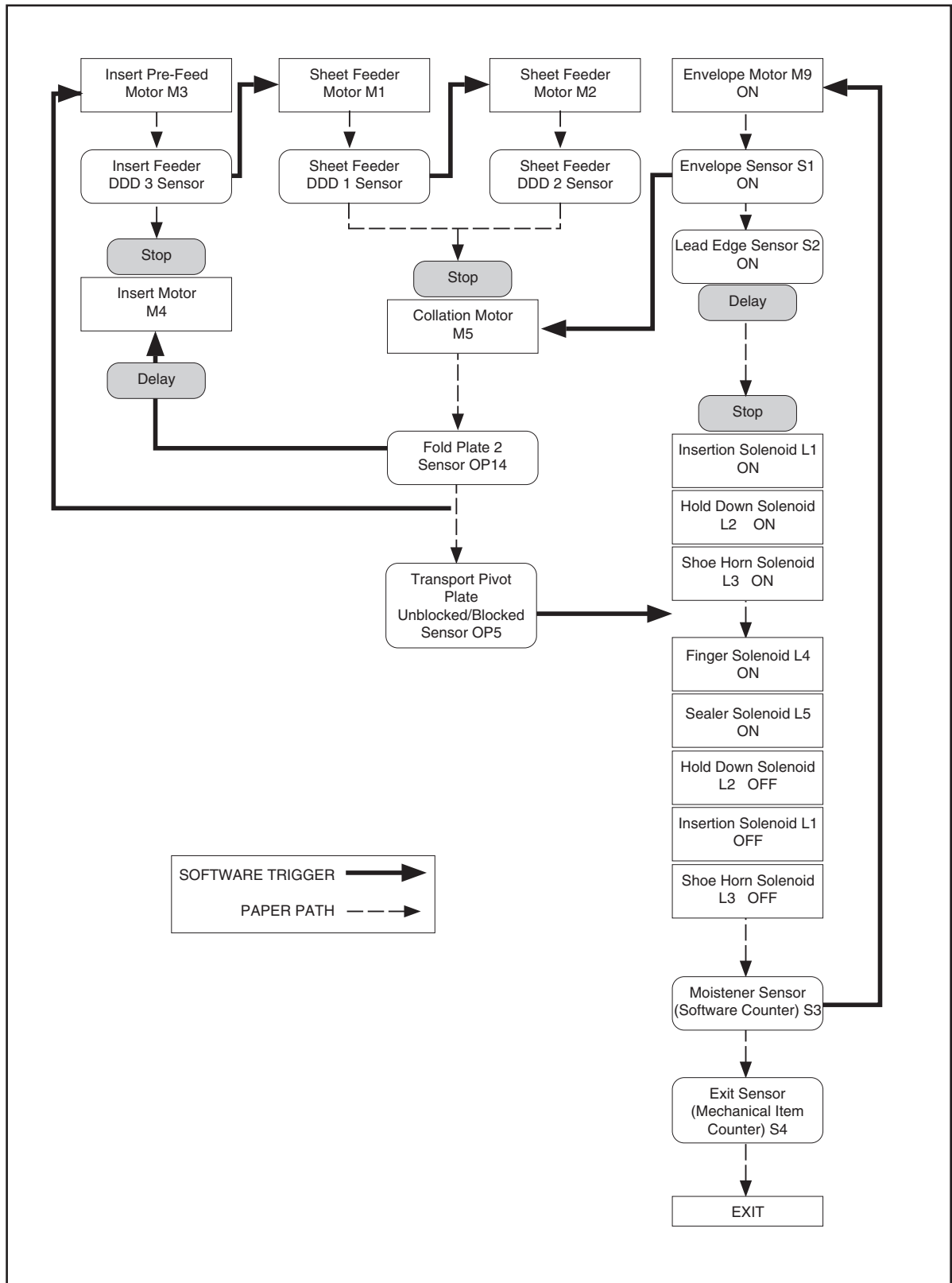
When the folded sheets and insert enter onto the pivot plate, this moves the flag out of sensor (OP5). When the insert is fully inserted, the pivot plate moves backwards returning the flag to its home position.

This operation triggers the software to energize the finger solenoid (L4), lifting the fingers and lifting the brush of the sealer by energizing solenoid (L5). It will then de-energize the hold down solenoid (L2), insertion solenoid (L1), and the shoe horn solenoid (L3).

The envelope is then driven from the insertion area into the sealer area. The next envelope is fed when the lead edge of the envelope pushes the moistener sensor (S3) forward (the software will increment by a count of 1 for the EIU). The envelope then enters the inverter area and finally exits into the stacker.

The exit sensor (S4) will increment the mechanical counter (located behind the manual advance knob door) by 1.

This sequence is shown in flow chart form on the following page.



**Flow Diagram - Two Sheet Feeders Plus an Insert Mode**

## 3 • Theory of Operation

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### 3.7 THE FOLD ONLY MODE

When the start button is pressed, the sheet feeder motor (M1) is switched on. This feeds a sheet over the Double Document Detector (DDD1) sensor. The sheet stops, after a counted delay, in the collation nip. This results in the sheet being slightly over driven.

The software disables the envelope motor (M9) and envelope sensor (S1) and sends the signal to turn on the collation motor (M5).

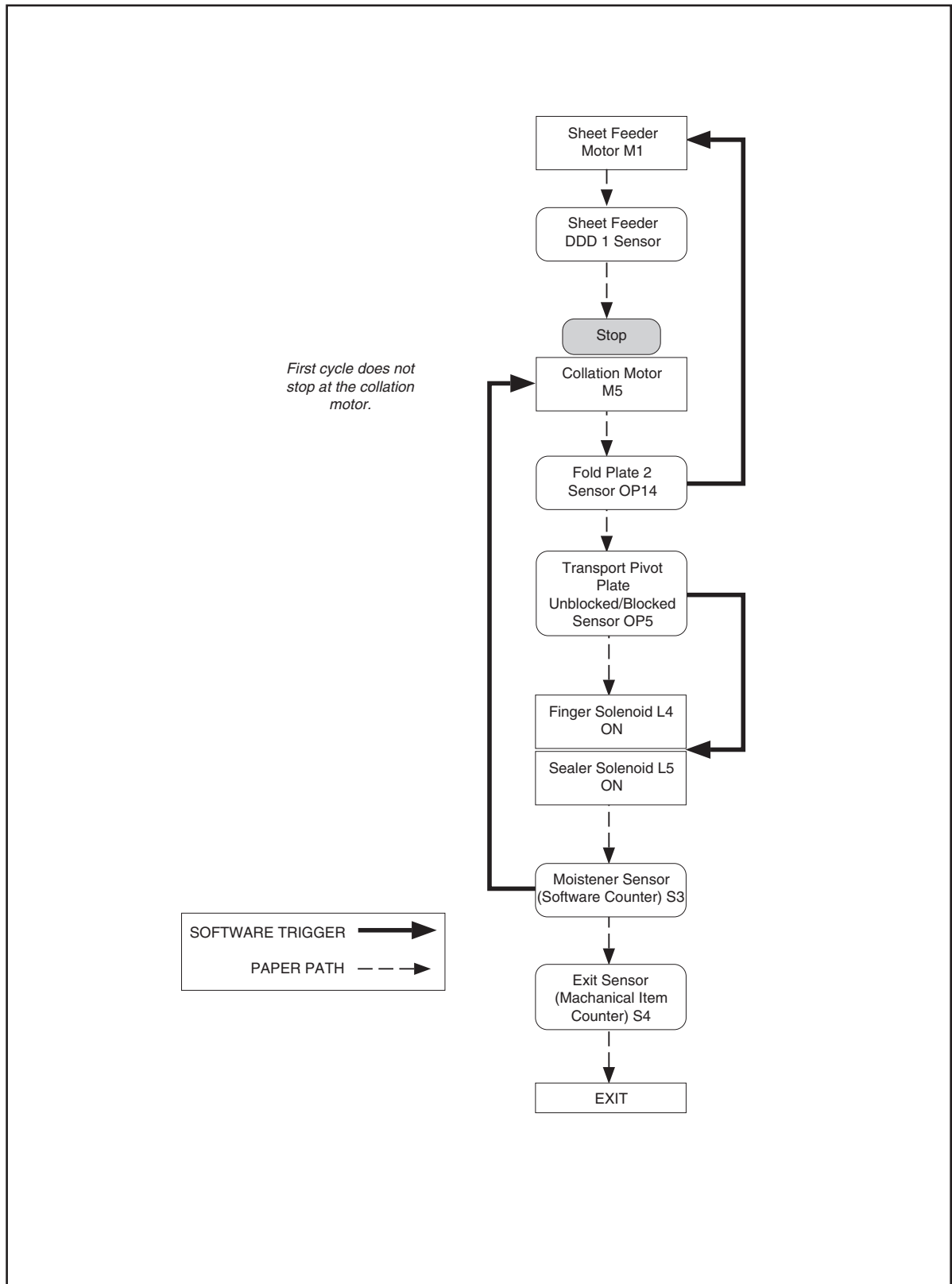
The next sheet fed from the sheet feeder will be triggered by the previous sheet fed entering the fold plate 2 sensor OP14. When the folded sheet enters onto the pivot plate, this moves the flag out of sensor (OP5). The pivot plate moves backwards and returns the flag to its home position.

This operation triggers the software to energize the finger solenoid (L4), lifting the fingers and lifting the brush of the sealer by energizing solenoid (L5).

The document is then driven from the insertion area into the sealer area. The next document is fed when the lead edge of the document pushes the moistener sensor (S3) forward (the software will increment by a count of 1 for the EIU). The document then enters the inverter area and finally exits into the stacker.

The exit sensor (S4) will increment the mechanical counter (located behind the manual advance knob door) by 1.

This sequence is shown in flow chart form on the following page.



**Flow Diagram - The Fold Only Mode**

## 3 • Theory of Operation

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### 3.8 ACCUMULATION FROM MAIN SHEET FEEDER

After a trial piece has been processed and the start button is pressed, the sheet feeder motor (M1) is switched on. This feeds a sheet over the Double Document Detector (DD1) sensor and stops it, after a counted delay, in the collation nip. This results in the sheet being slightly over driven.

At the same time, the envelope motor (M9) is switched on and an envelope is fed through the separator pad and roller. When the lead edge of the envelope moves forward to the envelope sensor (S1), the software sends the signal to turn on the collation motor (M5). The transported envelope stops in the insertion area at a predetermined time according to the size of envelope programmed within the job setup.

The insertion solenoid (L1) energizes, followed by the hold down solenoid (L2), and finally, by the shoe horn solenoid (L3).

Depending on fold type the sheet will be fed through the fold rollers and fold plates.

The folded sheet enters onto the pivot plate this moves the flag out of sensor (OP5). When the folded sheet is fully inserted, the pivot plate moves backwards returning the flag to its home position this de-energizes the hold down solenoid (L2) and the shoe horn solenoid (L3). L3 energizes again placing the shoe horn back into the envelope lifting the previous folded documents up.

The software sends the signal to turn on the collation motor (M5) sending the next sheet down through the fold rollers and fold plates onto the pivot plate. This happens until the predetermined sheets are inserted into the envelope. After the last document has entered the envelope the pivot plate moves the flag out of the sensor (OP5).

This operation then triggers the software to energize the finger solenoid (L4), lifting the fingers and lifting the brush of the sealer by energizing solenoid (L5) and the insertion solenoid (L1). The shoe horn at this point stays energized until the package passes the moistener sensor (S3).

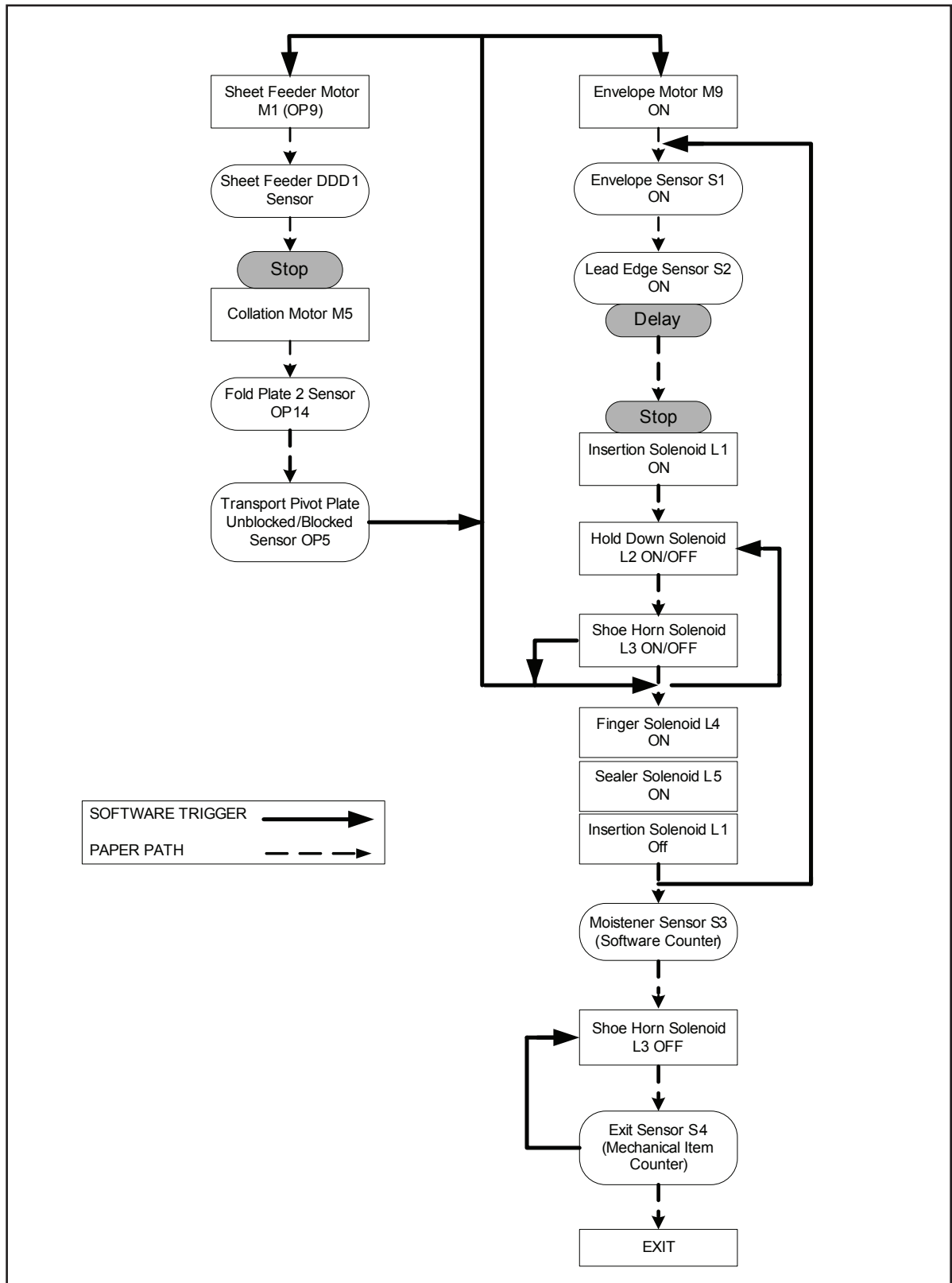
The envelope is driven from the insertion area into the sealer area. The next envelope is fed when the lead edge of the envelope pushes the moistener sensor (S3) forward (the software will be Incremented by a count of 1 for the EIU). The envelope then enters the inverter area and finally exits into the stacker.

The exit sensor (S4) will increment the mechanical counter (located behind the manual advance knob door) by 1.

In normal run mode, if no material has been detected at the Double Document Detection sensor, the sheet feeder motor (M1) will time-out after approximately 2 seconds. This is to clean the separator roller and pad. In 'daily mail' (manual feed) mode, this time is increased to approximately 20 seconds for operator loading. The manual feed lever opens the gap between the separator roll and pad.

This sequence is shown in flow chart form on the following page.





**Flow Diagram - Accumulation for Sheet Feeder 1 Mode**

## 3 • Theory of Operation

### 3.9 DOUBLE DETECT SENSORS

only adjustable in the service parameters screen and are not operator selectable. This is to allow the engineer to choose different detection reference points to suit the customer's application.

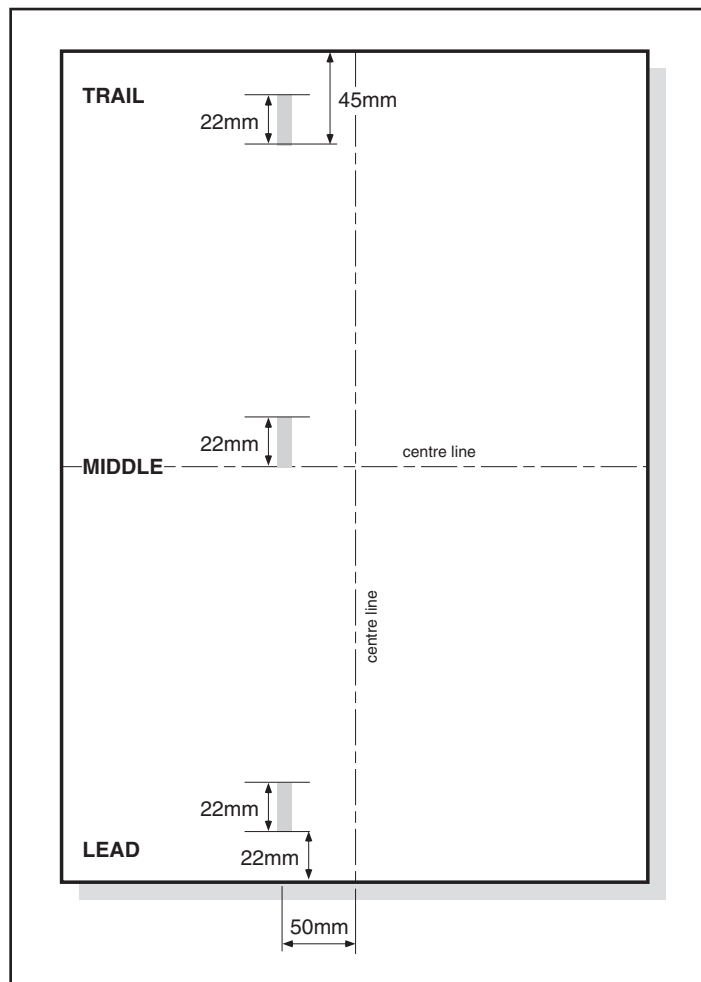
Sheet Feeder 1 and Sheet Feeder 2 have three positions available: LEAD, MIDDLE and TRAIL. The Insert feeder has only the one option: LEAD.

The Detection sensors work on an LED emitting through the thickness of the paper onto a Opto detector. The double detection takes 14 reference points in a 22mm window. There are 7 "High" and 7 "Low". From these readings, the software will take 7 relevant readings. The sensor is positioned 50mm to the left of the centre line.

On the LEAD position, the double detection will start reading at approximately 22mm from the lead edge of the document in the direction of feed. When a double is detected, the machine will stop and the document will be in the collation nip area. The machine will indicate which feeder the double has been fed from on the control panel.

On the MIDDLE position (not available on the insert feeder) the double detection will start halfway down the document. This is taken from the "length of paper" entered in the "Job Set Up Menu". When a double is detected, the machine will stop and the document will be in the insertion area. The machine will indicate which feeder the double has been fed from on the control panel.

On the TRAIL position (not available on the insert feeder) the double detection will start approximately 45mm from the trail edge of the document in the direction of feed. This is taken from the "length of paper" entered in the "Job Set Up Menu". When a double is detected, the machine will stop with the document inserted and fed into the stacker area. The machine will display "Double Check Stacker" and also indicate which feeder the double was fed from on the control panel.



**DDD Scan Areas**

### 3.10 AC MOTOR

The machines are fitted with a capacitor start motor which is driven using two solid-state relays (SSR's). Use of a motor start capacitor means the machine can only be started once every 17 seconds on average, hence the fitting of the hand crank to assist in the retrieval of jammed material.

In addition, there is a mechanical relay which is used as a safety interlock. The mechanical relay is powered from start-up. If a fault is detected in the A.C. circuit, the relay is de-energized until the power is recycled. There are also a set of micro-switches for use in jam clearance which will remove power from the relay.

To run the motor, the motor start SSR1 and motor run SSR2 are energized together. The motor start SSR will stay energized for 500ms or until the motor gets up to speed, whichever is shorter. If the motor has not attained speed after 500ms, both SSR's will shut down and a fault will occur.

### **3 • Theory of Operation**

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# 4 • Removal & Replacement

## 4.1 REMOVING COVERS AND P.C.B

### Covers

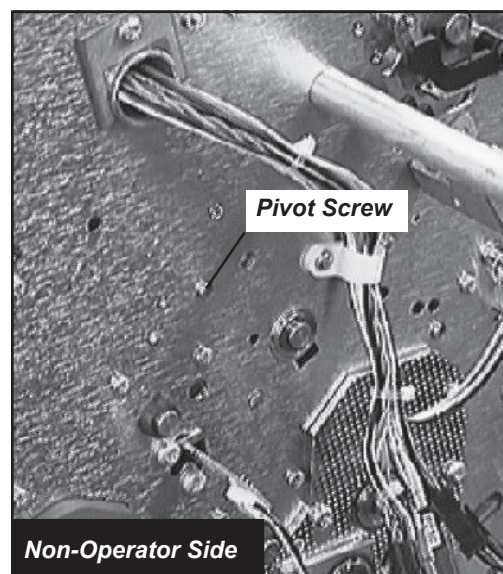
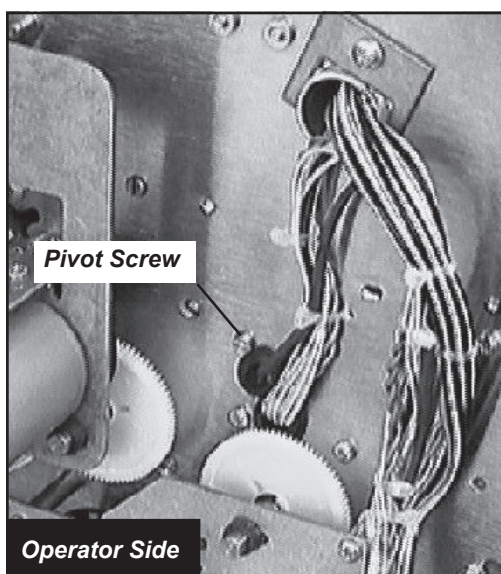
1. Disconnect power from the machine before attempting to remove the covers.
2. Remove all trays, feeders and both fold plates.
3. Remove all the metal and black plastic screws and inserts.
4. Remove all covers except moistener cover.
5. Remove the screw, washer and blue handle behind the AC hand crank door.
6. Disconnect ribbon connector from logic board before removing control panel.
7. Open the moistener cover and release the 2 springs on both sides of the machine and pull out cover. It may be necessary to unclip the Q station.
8. Disconnect all connectors including E.I.U port on the logic board.

### P.C.B.

1. Remove the 2 screws that holds the logic board backing plate. Tilt and lift logic board and backing plate away from machine.
2. Reassemble in reverse order.

## 4.2 REMOVAL OF JAM ACCESS PLATE

1. Follow instruction for cover removal in section 4.1.
2. Disconnect Double Document Detector sensor on jam access plate.
3. Remove the 2 pivot screws from the front and rear sides of the machine.

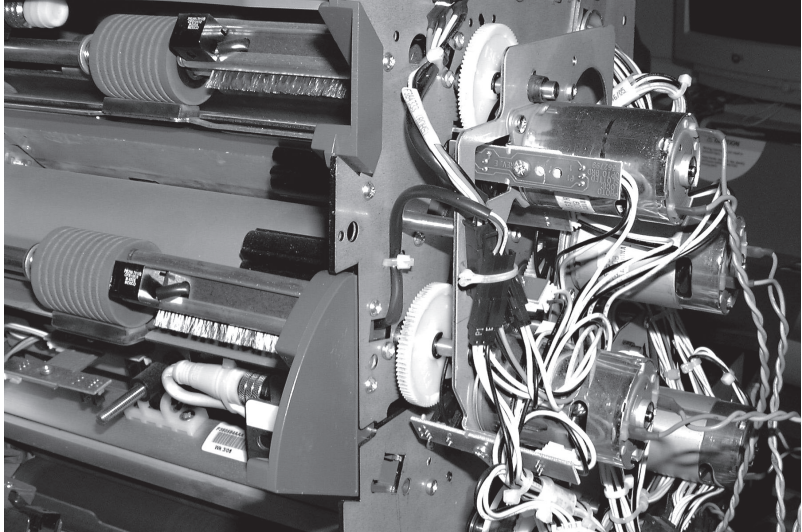


## 4 • Removal & Replacement

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### 4.3 REMOVING SHEETFEEDER SEPARATOR ROLLER & PAD

1. Follow instruction for cover removal in section 4.1.
2. Disconnect the following connectors on or near the motor bracket assembly: P19A, P19C, P19D, P20A, P20B, P20D and P20E.
3. Remove 3 screws from the sheet feeder motor bracket and carefully remove bracket. Take care not to lose bearings.
4. On the rear side, remove E-clip that holds the bearing in place. Slide the bearing inwards and remove E-clip, washer, spring and clutched separator roller.



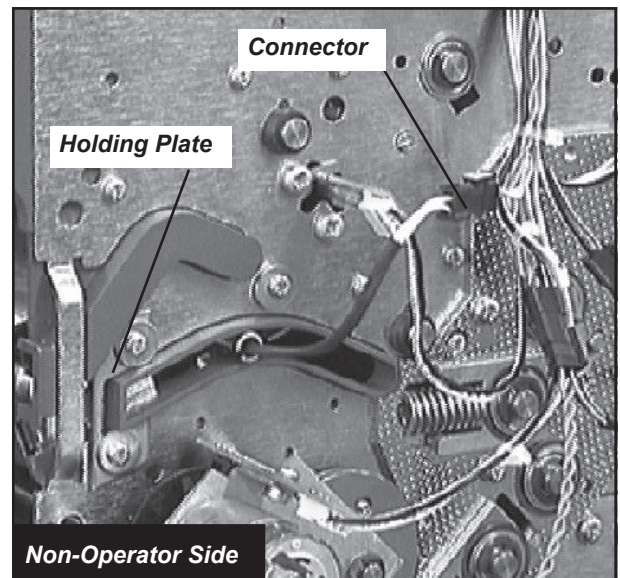
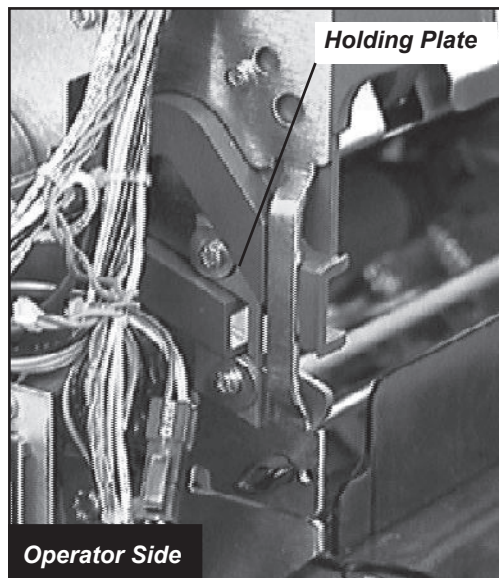
5. The separator pad can be unclipped and replaced at this point.

Note: All the old glue must be removed before fitting the new pad.

6. Reassemble in reverse order.

### 4.4 REMOVING CARRIAGE ASSEMBLY

1. Follow instruction for cover removal in section 4.1.
2. Disconnect connector P23C on rear side.
3. Remove the 2 holding plates (see illustrations) and screws on both the front and rear sides of the machine.
4. Remove carriage assemble from the machine.
5. Remove 4 self tapping screws from the assembly to expose sensor.
6. Reassemble in reverse order.



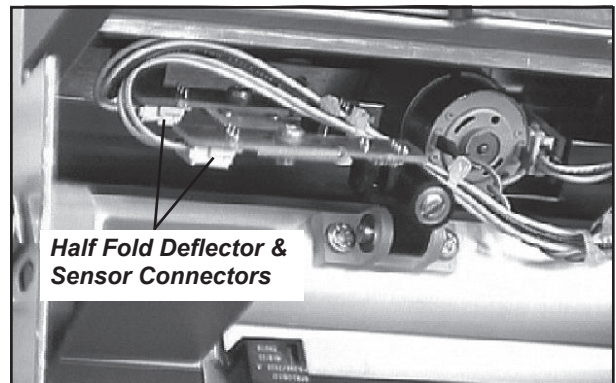


## 4 • Removal & Replacement

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### 4.5 REMOVAL OF LOWER COLLATION ROLLER

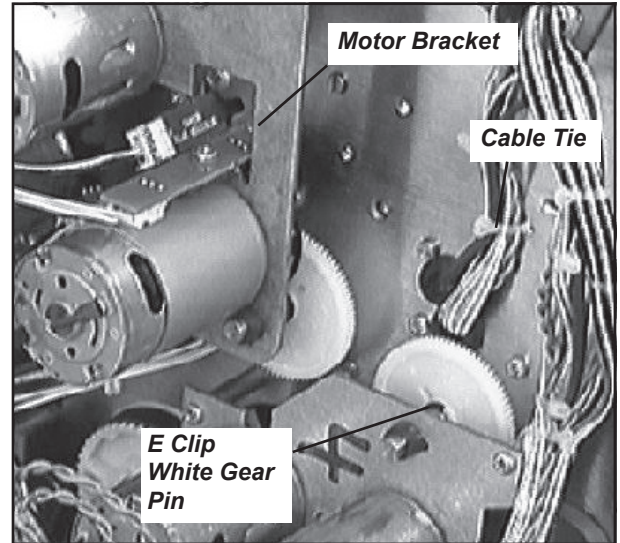
1. The machine should be in a half fold mode before the lower collation rollers can be removed. This allows easier access to the half fold deflector assembly.
2. Follow instruction for cover and PCB removal in section 4.1.
3. Follow instruction for removing sheet feeder motor bracket assembly section 4.3 steps 1-3.
4. Disconnect P24B from the Insert collation encoder PCB.
5. Remove the insert motor bracket assembly from front side, held with 3 screws.
6. Unlatch the Jam Access cover.
7. On front and rear sides, remove sheet feeder 2 tray mounts.
8. Disconnect PB16A from hold fold deflector motor and PB16B from half fold encoder PCB.
9. Remove 2 screws securing the half fold worm drive to the deflector plate.
10. Remove the E-clip and gear on the front side.
11. Remove 2 springs from sheet feeder 2 separator pad plate on the front and rear sides.
12. Remove pivot screws holding the separator pad plate and then remove the plate from the machine.
13. Remove pivot screws holding the half fold motor bracket assembly from both front and rear side frames.
14. Gently ease the motor bracket assembly out of the machine.
15. Remove all E-clips, pin and gear from the lower collation shaft.
16. Remove bearings from both front and rear side frames.  
  
Note: Take care of wavy washer removed with the bearing on rear side.
17. Withdraw shaft from machine.
18. Reassemble in reverse order, ensuring none of the cables are trapped or touching any of the shafts.





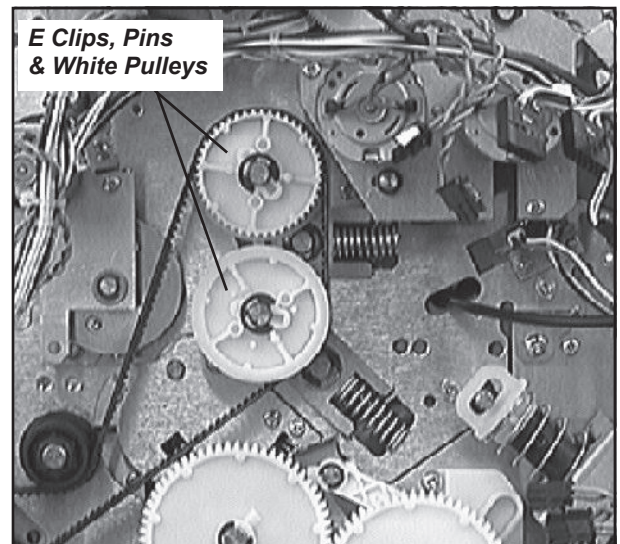
### 4.6 REMOVAL OF UPPER INSERT DRIVE ROLLERS

1. Follow instruction for cover and PCB removal in section 4.1.
2. Remove insert feeder assembly.
3. Remove the insert feeder motor bracket held by 3 screws.
4. Remove the E-clips, white gear and pin from behind the insert feeder motors brackets.
5. Remove the E-clips, white gear and pin from the lower shaft.
6. Undo the cable tie that limits the movement of the upper insert plate.
7. Remove the screws from both the front and rear sides of the upper insert plate.
8. Remove both insert drive rollers and replace the bobbins and lower shaft with the roller bonded to the shaft.
9. Reassemble in reverse order.



### 4.7 FOLD ROLLER REMOVAL/REPLACEMENT

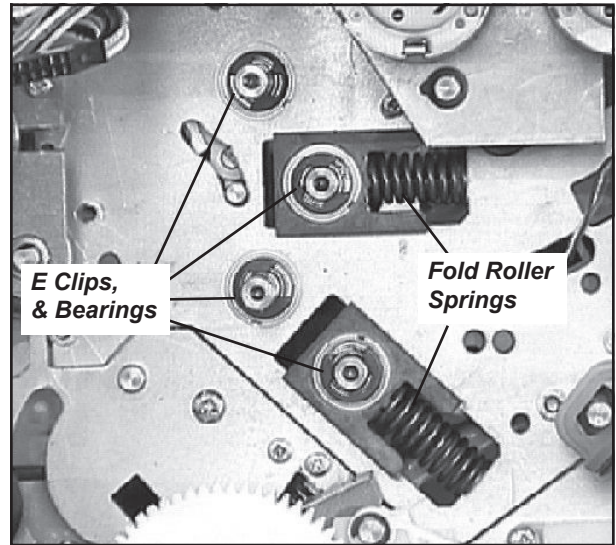
1. **The machine should be in a half fold mode before attempting to remove the fold roller.**
2. Follow instruction for cover and PCB removal in section 4.1.
3. Release belt tension.
4. Remove 2 E-clips, pins and the white pulleys located next to the insert motor bracket on the front side of the machine.
5. Remove 4 fold roller springs on the front and rear side of the machine, taking note of the position of the different strength springs. Care



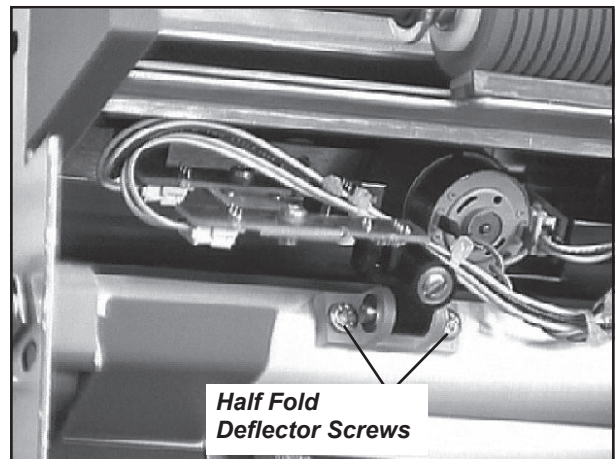
Continued...

## 4 • Removal & Replacement

5. Remove 4 fold roller springs on the front and rear side of the machine, taking note of the position of the different strength springs. Care should be exercised when removing these springs.
6. Remove 4 E-clips and bearings from the front side.
7. Remove 4 E-clips, wavy washers and bearings from the other end of the fold rollers on the rear side.



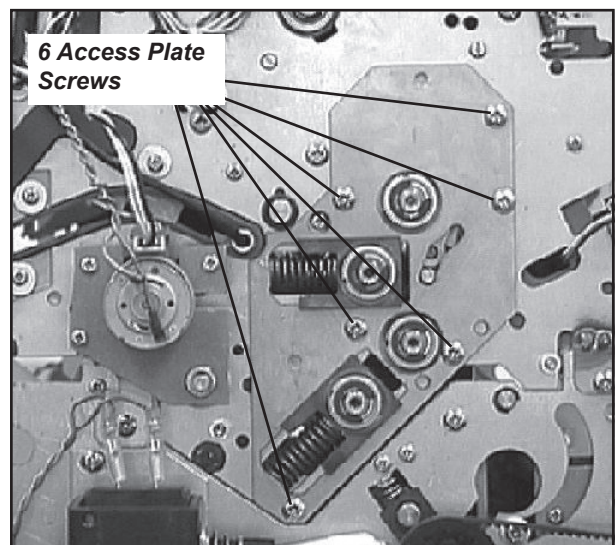
8. Remove 2 screws that hold the bracket to the half fold deflector.



9. Remove 6 screws from the fold roller access plate on the rear side.
10. Remove half fold deflector and roller complete, through the rear frame. Withdraw the other fold rollers from the machine.
11. Reassemble in reverse order.

**Note:**

The idler fold rollers have a different length shaft.



### 4.8 DISMANTLING INSERT FEEDER (DI380) ONLY

1. Remove insert feeder.
2. Detach wedge from feeder
3. Unscrew the 4 screws holding the top cover from the insert feeder tray.
4. Remove the four screws holding the side walls to the tray.
5. Remove the single screw and washer holding the blue adjustment arm.
6. Remove the blue indicator needle and the bridge on the rear side.
7. Disconnect the out of paper sensor and remove the side walls.
8. Disconnect the insert feeder motor and encoder sensor.
9. Remove the e-clips, pins and pre-feed roller from the pre-feed. Withdraw the shaft but take care to note the orientation of the 1 way clutch.
10. Remove the two nylon bearings from the cradle.
11. Remove the four screws that secure the motor. Two of the screws have 1" long spacers.
12. Gently remove the motor from its location.
13. Remove the nylon bearing, e-clips and pin behind the gear next to the separator rollers. To remove the separator rollers from the housing, it is necessary to split the insert feeder mouldings.
14. Remove the last screw that holds the two halves of the mouldings together, then loosen the Allen screw (1.5mm Allen Key) that holds the mouldings to the upper shaft.
15. Remove the screw on the cradle and split the separator housing to remove the separator roller complete with nylon bearings and cradle from the large insert feeder moulding.
16. Remove the separator rollers. Note direction of drive.

## 4 • Removal & Replacement

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### 4.9 DISMANTLING INSERT FEEDER (DI425/SI3500)

1. Remove insert feeder.
2. Detach wedge from feeder
3. Unscrew the 4 screws holding the top cover from the insert feeder tray and remove top cover.
4. Turn the whole unit over onto its' back. Remove 4 screws from the bottom tray which are holding the side walls to the tray.
5. Turn the whole unit back over and remove the 2 screws holding the bracket to the upper pre-feed roller.
6. Wind the side guides out to maximum.
7. Carefully remove the assembly and side frames
8. Disconnect the paper sensor from the hot shoe.
9. Remove any restricting cable ties to gain access to the unit.
10. Remove the E-Clips, pins and pre-feed rollers from the pre-feed shafts. Take note that the upper rollers are clutched and the lower pre-feed rollers are fixed on the D shaft.
11. Remove the screws holding the motor bracket assembly and bearing and then remove the motor bracket assembly and bearing.
12. Remove the E-Clip gear and pin, then remove the 2 screws holding the cleaning pad and loosen the centralising allen screw from the top of the unit
13. Removing the casting screw to enable you to split the casting into 2 pieces to remove the shaft and feed rollers.
14. Re-assemble in reverse order, making sure that the seperation is set correctly. Refer to seperator roller height section 5.13.2.

### 4.10 REMOVAL OF TOP ASSEMBLY

1. Follow instruction for cover and PCB removal in section 4.1.
2. Disconnect counter connector P28K at the AC hand crank.
3. Undo the belt tension next to the hand crank gearing and remove the drive belt.
4. Remove fold plate 1 motor (M6) held by 3 screws and an E-clip and washer on the drive pulley shaft. Disconnect motor and encoder sensor.
5. Disconnect the cables to the hold down solenoid (L2).
6. Disconnect the cables for the motor encoder P29B and the motor P29A.
7. Remove fold plate 2 motor (M7) held by 3 screws and an E-clip and washer on the drive pulley shaft.
8. Remove the belt and drive pulley from the shaft to gain access to the top assembly locating screw.
9. Remove the 4 screws that hold the top assembly to the base unit from both the front and rear sides.
10. Remove the top assembly from the base unit by the support bar at the top of the assembly.

**Note:** When refitting, ensure the top assembly screw holes are on the outside of the base unit side frames.



## 4 • Removal & Replacement

### 4.11 REMOVAL OF ENVELOPE FEED ROLLERS AND SEPARATOR PAD (DI380/SI3300 ONLY)

1. Remove the lower left hand (envelope feeder area) covers from the front and rear side of the machine.

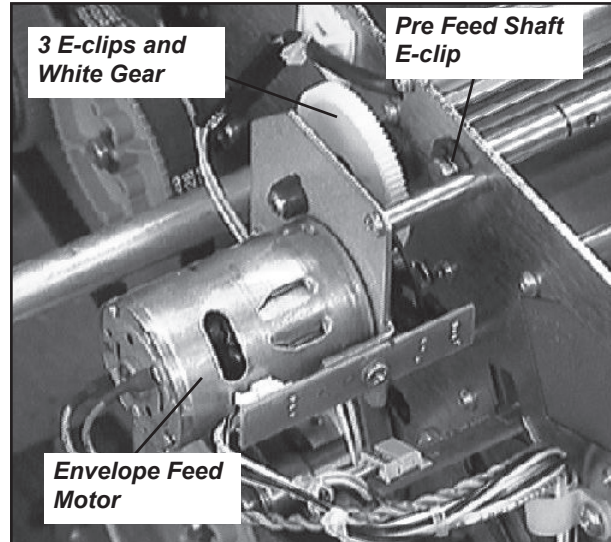
2. Unclip the cover from the envelope flap deflector and unclip the out of paper sensor.

3. Remove the following from the rear side:

Envelope feed motor (held in place by 3 screws).

3 E-clips and white gear from separator shaft.

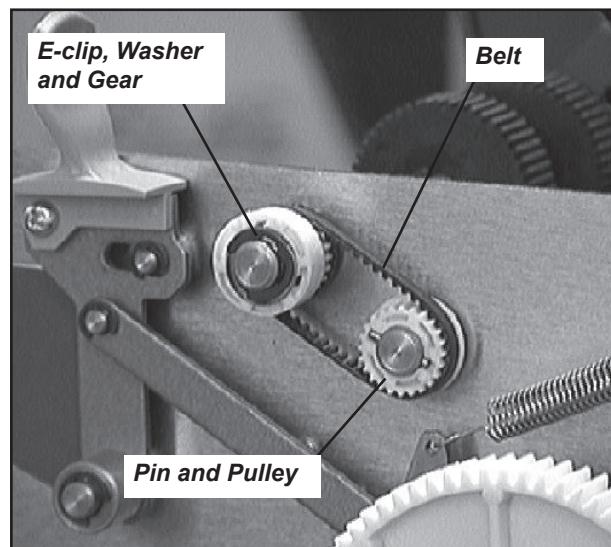
E-clip from the pre feed shaft.



4. Remove the E-clip, washer and gear on the front side of the pre feed shaft.

5. Move separator assembly towards the front of the machine.

6. Remove pin, pulley and belt from the front end of the separator shaft. Note orientation of the pulley.

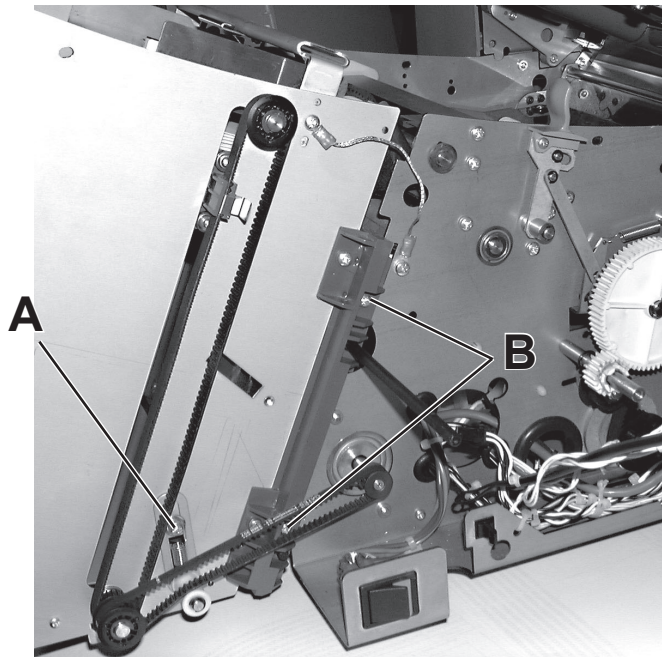


7. Remove all bearings from the frame and remove the separator/pre feed assembly.
8. Remove the rollers and bearing from one side only.
9. To remove the separator pad, undo the 2 screws on the separator plate.
10. Reassemble in reverse order ensuring that the separator roller is central to the separator pad.

### 4.12 REMOVING ENVELOPE FEEDER (DI425/SI3500 ONLY)

1. Remove envelope feeder covers.
2. Disconnect wiring for Upper and Lower Limit Sensors, (IL13 & IL14) at the rear of the machine, and also the earth strap at the front of the machine.
3. Release tensioner (**A**) on Envelope Platform Motor drive belt, and remove.
4. Remove screws (**B**) fixing plastic plate to the main side frames, (two screws each side).
5. Lift envelope feeder and unhook from main machine.
6. Reassemble in reverse order.

*Removing the Envelope Feeder will give access to:* MTR 20



### 4.13 REMOVING ENVELOPE FEED ROLLERS & SEPARATOR PAD (DI425/SI3500 ONLY)

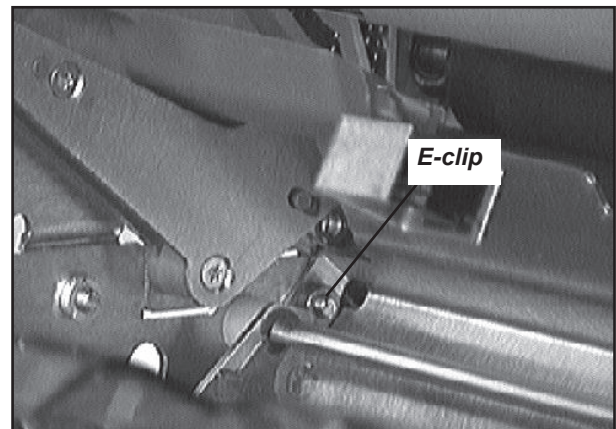
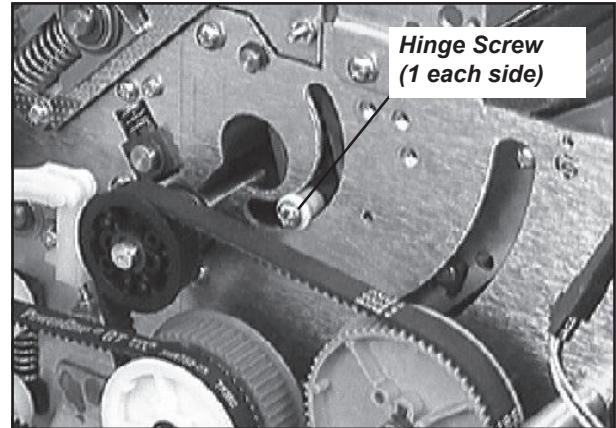
1. Remove envelope feeder covers.
2. Remove Envelope Feed Motor, (M 9), and mounting bracket from rear of machine.
4. Remove envelope feed roller assembly.
5. Remove two fixing screws from separator pad assembly, and lift out.
6. Reassemble in reverse order.

## 4 • Removal & Replacement

### 4.14 REMOVAL OF FLAPPER ASSEMBLY AND BLADE

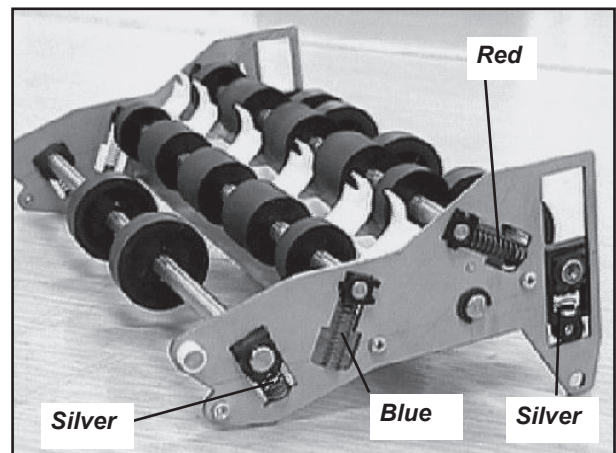
#### Flapper Assembly

1. Follow instruction for cover and PCB removal in section 4.1.
2. Remove the 2 screws on the hinge on the front and rear sides. Take care not to drop the spacers. It may be necessary to remove the large E-clip, white gear and pin.
3. Remove the E-clip on the rear side. Withdraw the shaft through the on the same side and separate the assembly from the base.



#### Blade

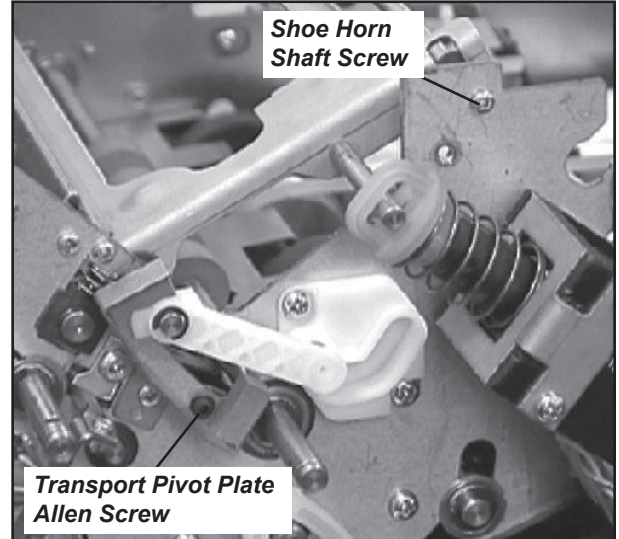
5. Remove 4 screws from the tinted cover.
6. Remove the flapper unit springs noting the position of the different colour springs.
7. Remove the 2 inner screws on each side of the assembly (front and rear of the blade).
8. Remove the 2 E-clips on the inside of the 2 outer rollers.
9. Withdraw one side of the frame.
10. Withdraw the rollers and flapper blade.
11. Reassemble in reverse order ensuring the flapper blade moves freely.





### 4.15 REMOVAL OF THE TRANSPORT PIVOT PLATE & INSERTION ROLLER

1. Follow instruction for cover and PCB removal in section 4.1.
2. Follow instruction for top assembly removal in section 4.9.
3. Remove the 2 screws that hold the shoe horn shaft assembly in place and remove shaft from the base.
4. Remove all E-clips, drive gear, pin, wavy washer and bearing from both the front and rear end of the shaft.
5. Remove the shoe horn buffer stop on the operator side.
6. Press down hold down fingers and remove roller.
7. To remove screw and sensor limit arm.
8. Using a 2.5mm allen key undo the Allen screws from both ends of the transport pivot plate then remove the sensor arm attached to the plate.
9. Reassemble in reverse order. Re align transport pivot plate to rollers ensuring that they do not bind.



### 4.16 REMOVAL OF SEALER ROLLERS

1. Disconnect power.
2. Remove the sealer covers only.
3. Remove inverter plate, held in by 4 screws on both sides.
4. Remove springs, E-clips and bearings from upper and lower sealer roller shafts.
5. Loosen the water tank on rear side.
6. Remove sealer exit drive belt by removing E-clip, gear, pin, bearing and wavy washer and withdraw roller from the base.
7. Reassemble in reverse order.

## 4 • Removal & Replacement

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### 4.17 REMOVAL THE INVERTER MOTOR ASSEMBLY

1. Disconnect power.
2. Remove the 8 screws from the inverter ramp (4 long and 4 short).

**Note:** Access is now gained to the motor and encoder board. (If the plastic bearings are removed via the motor and encoder, make sure the bearings are correctly located on reassembly).

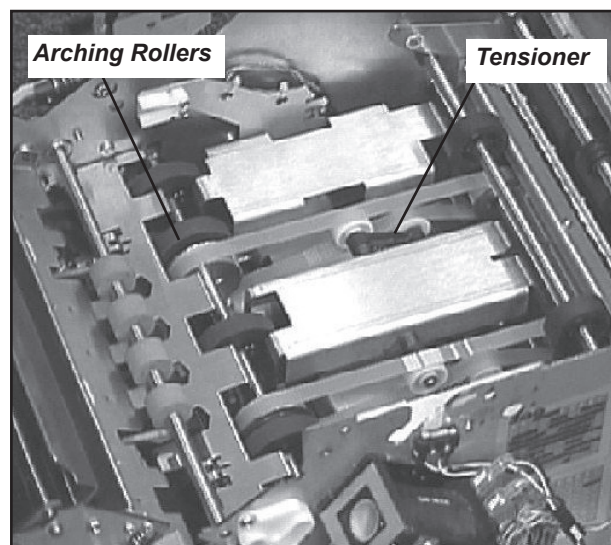
3. Reassemble in reverse order.

### 4.18 REMOVAL OF THE CONVEYOR TRANSPORT BELTS AND ROLLERS

1. Using the job setup program, set the envelope depth to 162mm before switching off. This will give greater access to the rollers.
2. Follow instruction for cover and PCB removal in section 4.1.
3. Follow instruction for top assembly removal in section 4.9.
4. Disconnect connector on the rotary solenoid in the Q station.
5. Unclip the Q station from its location.
6. Remove both springs and unclip sealer brush assembly.
7. Remove sealer shield that is held in place by 2 screws on the front and rear sides.

CAUTION: Take care not to damage the switch.

8. Remove the upper conveyor idler roller by removing 2 springs, E-clips and bearings from both the front and rear side and withdraw roller.
9. Remove tension from conveyor/transport belts.



Continued...

## 4 • Removal & Replacement

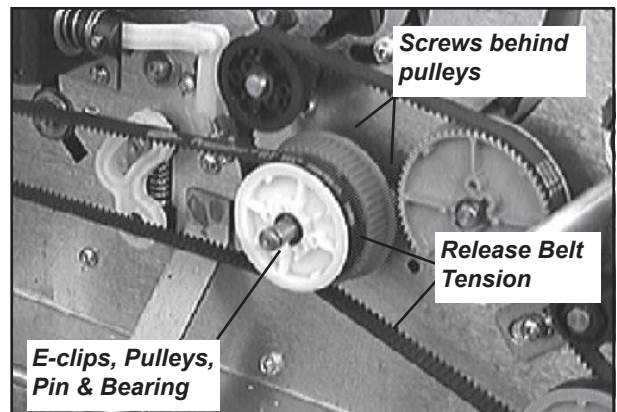
10. On the arching roller, push the rearmost bobbin off the pin.
11. Remove E-clips and bearings from front and rear sides holding the arch roller.
12. Withdraw the arching roller from the base by tilting it upwards at the front end.
13. Loosen the water tank on non operator side.
14. Undo belt tension on sealer exit drive belt.
15. Remove the E-clip on the operator side holding the transport drive roller.
16. Push transport drive roller out of the bearing on the operator side and tilt roller upwards, this will allow the removal of the belts.
17. The bobbins and pulleys can be removed at this point by removing the 2 inner E-clips.
18. Reassemble in reverse order.

### Note

**Water must be drained from the machine before working on any component requiring access from behind the base plate or which requires tipping the machine back onto the supports.**

#### 4.19 REMOVING LOWER FLAPPER ROLLERS

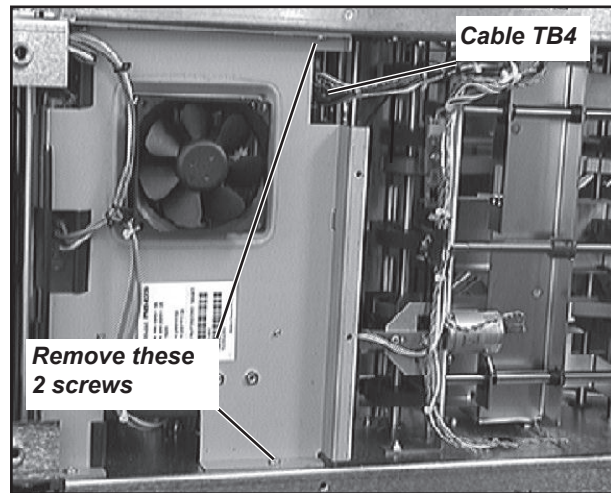
1. Follow instruction for cover and PCB removal in section 4.1.
2. Follow instruction for top assembly removal in section 4.9.
3. Release belt tension on rear side.
4. Remove E-clip, pulleys, pin, E-clip, wavy washer and bearing on rear side.
5. Remove E-clip and bearing on front side.
6. Remove 4 screws from the front and rear sides and remove roller.
10. Roll the machine back making sure, the water is removed from the sealer tank.
11. Remove base plate.



## 4 • Removal & Replacement

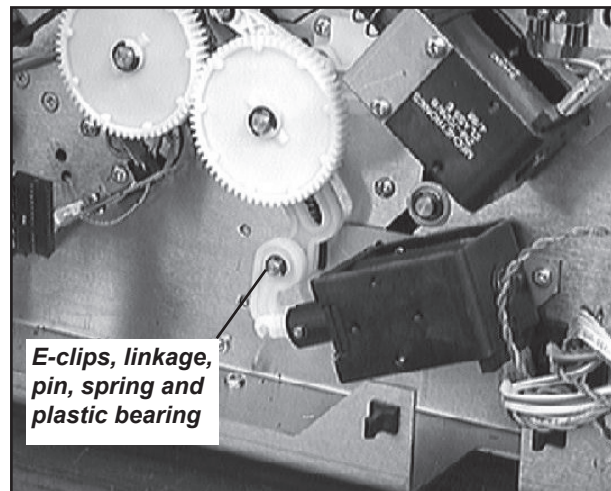
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12. Disconnect power supply cable TB4.
13. Remove 2 screws from power supply (top and bottom on right side of Power Supply Unit) and pivot the unit to gain access to the roller.
14. Remove the roller and plate from the machine.
15. Reassemble in reverse order. Ensure the cable for the Power Supply Unit is not trapped when refitting.



### 4.20 REMOVAL OF THE LOWER ENVELOPE DRIVE ROLLER

1. Follow instruction for cover and PCB removal in section 4.1.
2. Remove E-clip and plastic linkage from the rear end of the shaft.
3. Remove all E-clips, linkage, pin, spring and plastic bearing on the front side.
4. Roll the machine back making sure, the water is removed from the sealer tank.
5. Remove base plate and withdraw shaft.
6. Reassemble in reverse order.



### 4.21 REMOVAL OF THE POWER SUPPLY UNIT AND AC MOTOR

1. Follow instructions for the removing all covers only, in section 4.1 steps 1-6.
2. Undo the E.I.U. port connector from the logic board.
3. Drain the water from the sealer unit.
4. Undo the screws holding the AC motor cover.
5. Undo the wiring holding the on off switch and AC input filter, noting the orientation of the wiring.
6. Loosen the AC belt tension and remove the drive belt. (When reassembling, take note of the 'Caution' below).
7. Undo the bracket holding the AC encoder sensor (this also holds the AC motor).
8. Undo the rest of the screws retaining the AC motor.
9. Tilt the machine back and undo the 4 feet holding the base plate and remove the plate.
10. Disconnect connectors P35D (sensor), TB4 (power supply unit) and all other wiring into the power supply unit (motor start capacitor and AC inputs).
11. Undo the 4 screws holding the Power supply unit and remove the unit.
12. Unclip the motor start capacitor from the holder as this is wired to the AC motor and remove both the AC motor and motor start capacitor.
13. Reassemble in reverse order.

**CAUTION:**

When reassembling the AC motor drive belt, adjust the tensioner to take up the belt slack. DO NOT OVERTENSION. Overtensioning of the belt will induce premature failure.

**Note for countries using 60Hz AC:**

The motor uses a smaller diameter drive pulley. This will affect the drive belt tension and the tensioner will be lower to take up more tension.

## **4 • Removal & Replacement**

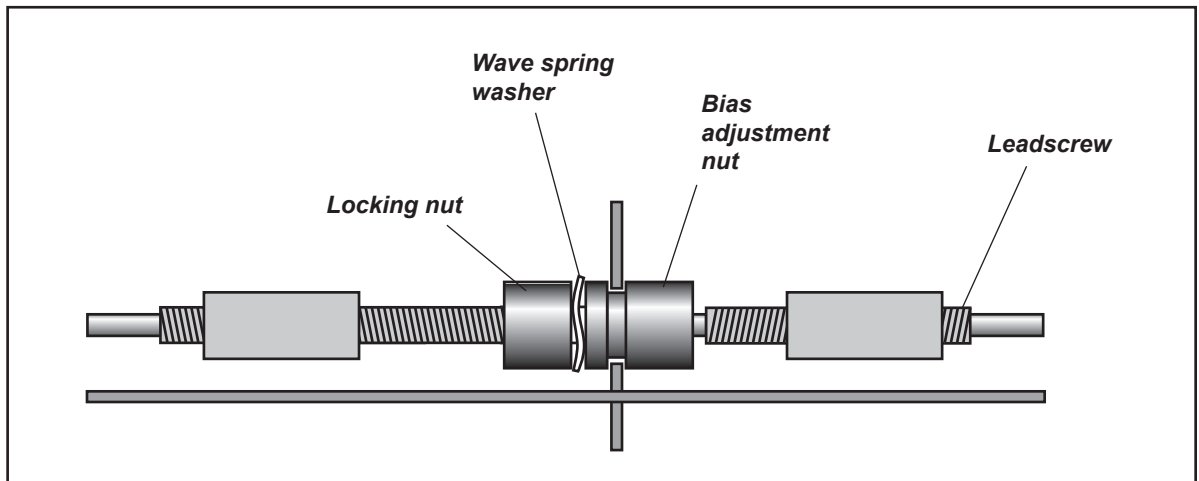
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# 5 • Adjustments

## 5.1 ENVELOPE FEED TRAY GUIDES (DI380/SI3300 ONLY)

1. Wind Leadscrew so that side guides are at the middle of the tray.
2. Loosen the Knurled Locking Nut and adjust the Bias Adjustment Nut until the guides are of equal distance from the central raised tray area.
3. Tighten the Locking Nut.

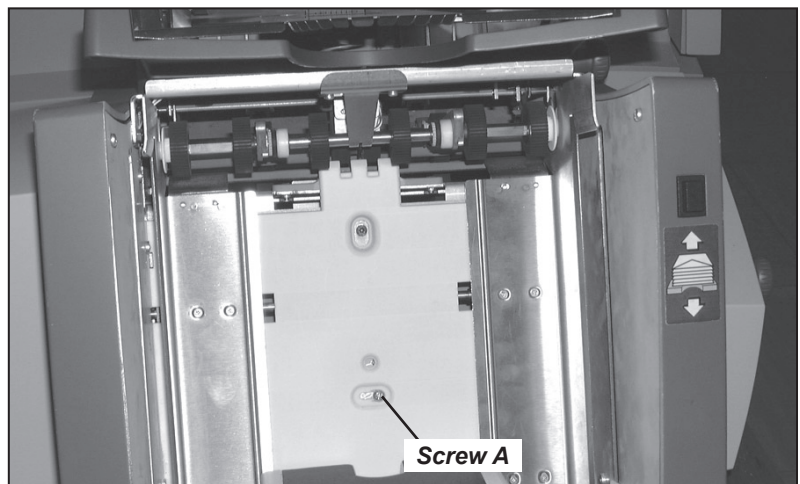


*Envelope Feed Tray Guide Adjustment*

## 5.2 ENVELOPE FEEDER OFFSET ADJUSTMENT (DI425/SI3500 ONLY)

This adjustment enables the envelope to feed biased to the left or right as it travels through the machine. This will help with the insertion of some materials, especially when using envelopes with inside seams.

1. Set side guides to the width of the envelope to be used.
2. Loosen the Envelope Offset Adjustment screw **A**.
3. Move side guides to required position.
4. Tighten Envelope Offset Adjustment screw.
5. Cycle the machine with sheets/inserts and check position of envelope in insertion area.

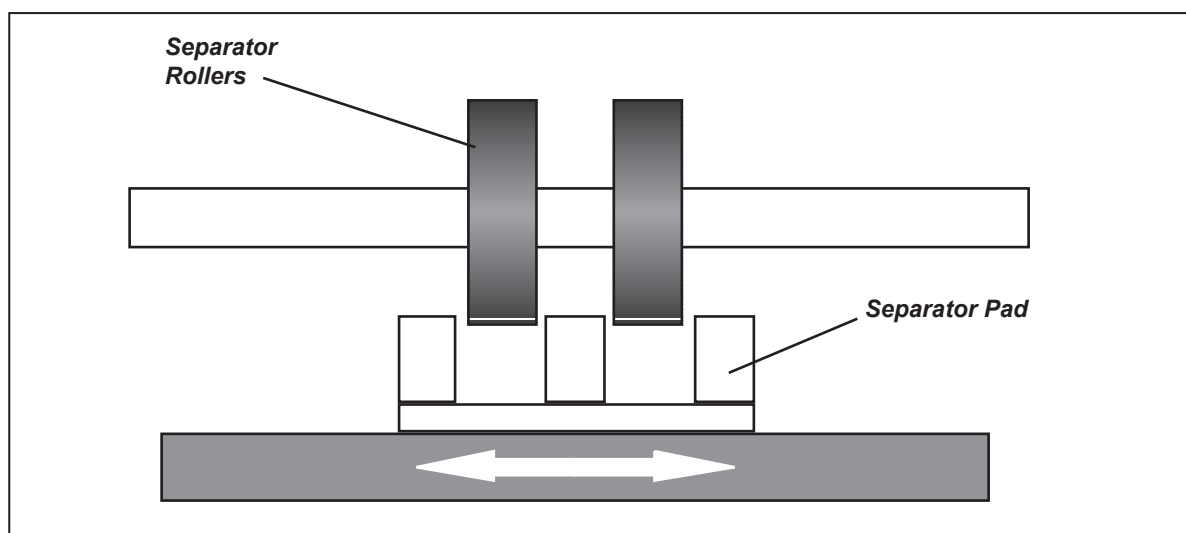


*Envelope Feeder Offset Adjustment*

## 5 • Adjustments

### 5.3 ENVELOPE SEPARATOR PAD SIDE TO SIDE ADJUSTMENT

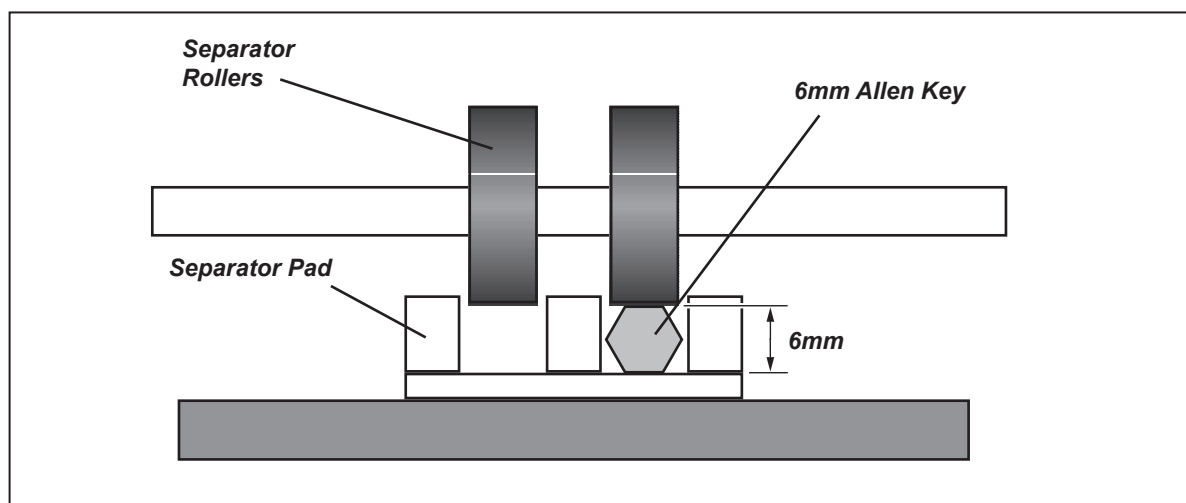
1. Loosen the two screws holding the Separator Pad.
2. Adjust the Separator Pad front to back so that it is centralised to the Separator Roller.



*Envelope Separator Pad Adjustment*

### 5.4 ENVELOPE SEPARATOR PAD HEIGHT (DI380/SI3300 ONLY)

1. Loosen the screws which hold the Separator Bracket to both side frames.
2. Adjust the bracket until a gap of 6mm is achieved between the Separator Pad and Separator Roller. A 6mm Allen Key may be used to check the height.
3. Tighten the Separator Bracket screws.

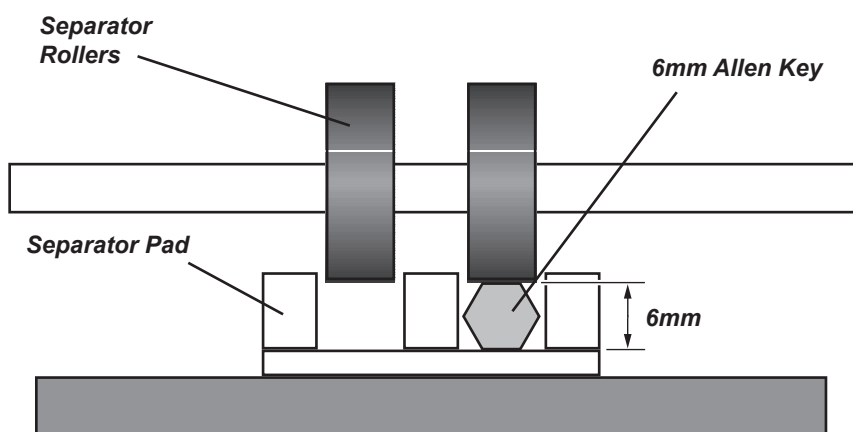
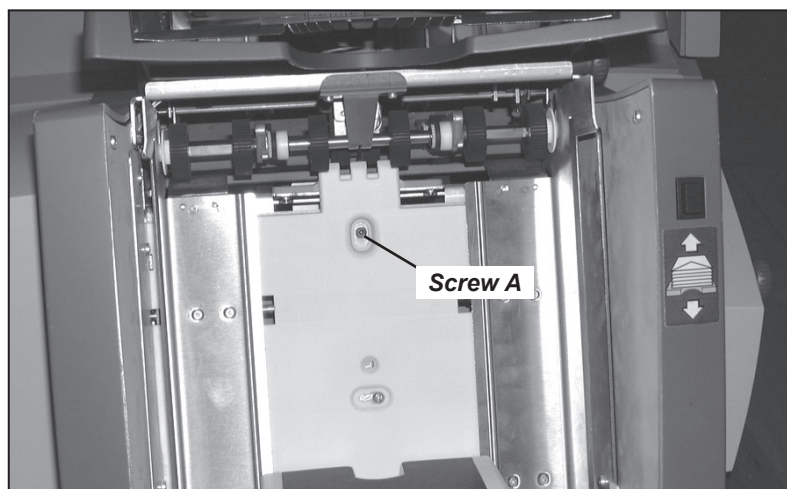


*Envelope Separator Pad Height Adjustment (DI380/SI3300)*



### 5.5 ENVELOPE SEPARATOR PAD HEIGHT (DI425/SI3500 ONLY)

1. Loosen the Envelope Separator Pad Adjustment screw **A**.
2. Adjust the bracket until a gap of 6mm is achieved between the Separator Pad and Separator Roller. A 6mm Allen Key may be used to check the height.
3. Tighten the Separator Pad Adjustment screw.

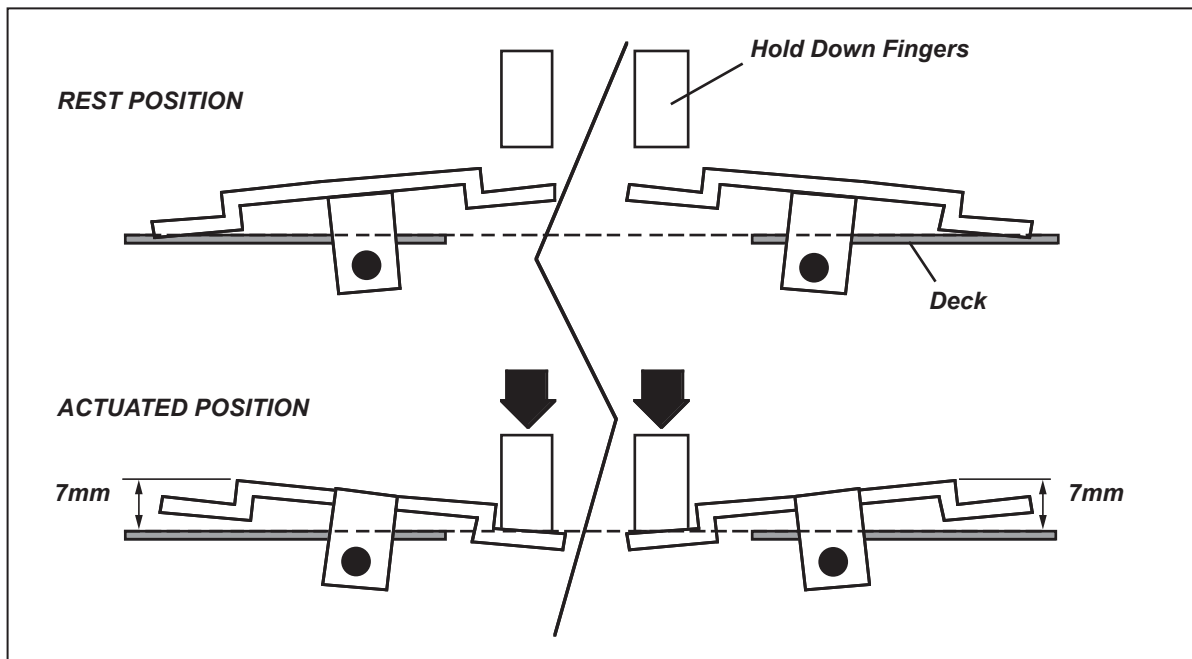


*Envelope Separator Pad Height Adjustment (DI425/SI3500)*

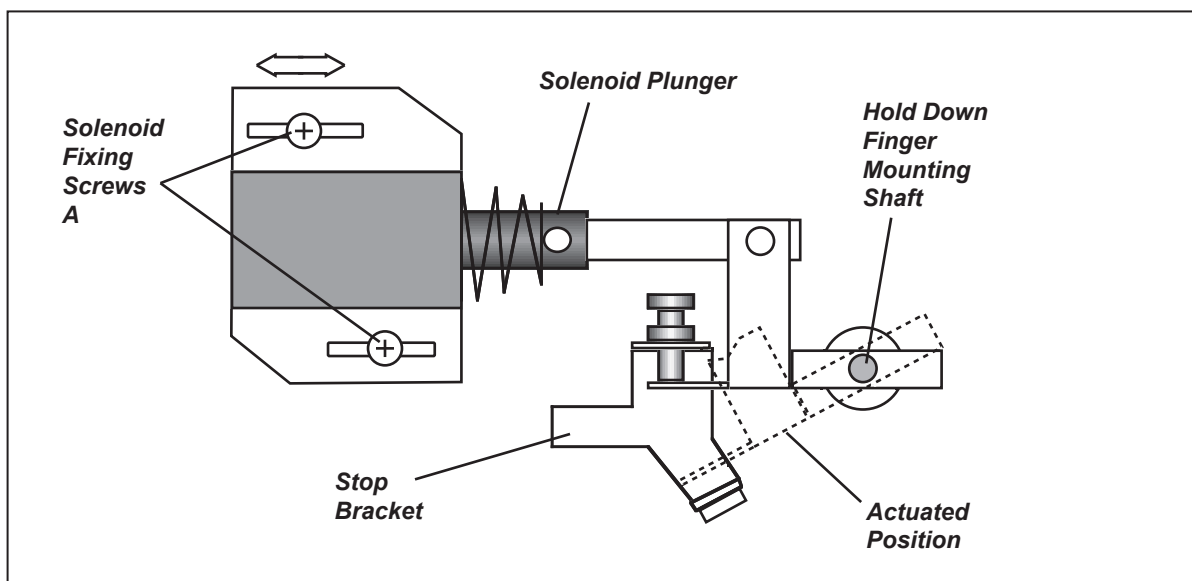
## 5 • Adjustments

### 5.6 INSERTION FLIPPER ACTUATION HEIGHT/ HOLD DOWN SOLENOID ADJUSTMENT

1. Loosen the Hold Down Solenoid mounting screws (**A**) slightly.
2. Depress the plunger of the hold down solenoid (**L2**) so that the hold down fingers pivot the flippers. Move the hold down solenoid in its slots until the flippers raise to a height of 7mm above the deck measured from the points shown in the diagram.
3. Fully tighten the solenoid fixing screws.



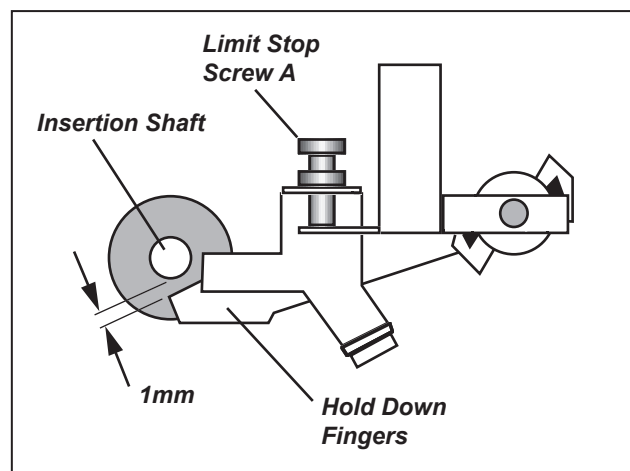
*Flipper Actuator Height Setting*



*Hold Down Solenoid Assemblies*

### 5.7 INSERTION HOLD DOWN FINGER REST POSITION

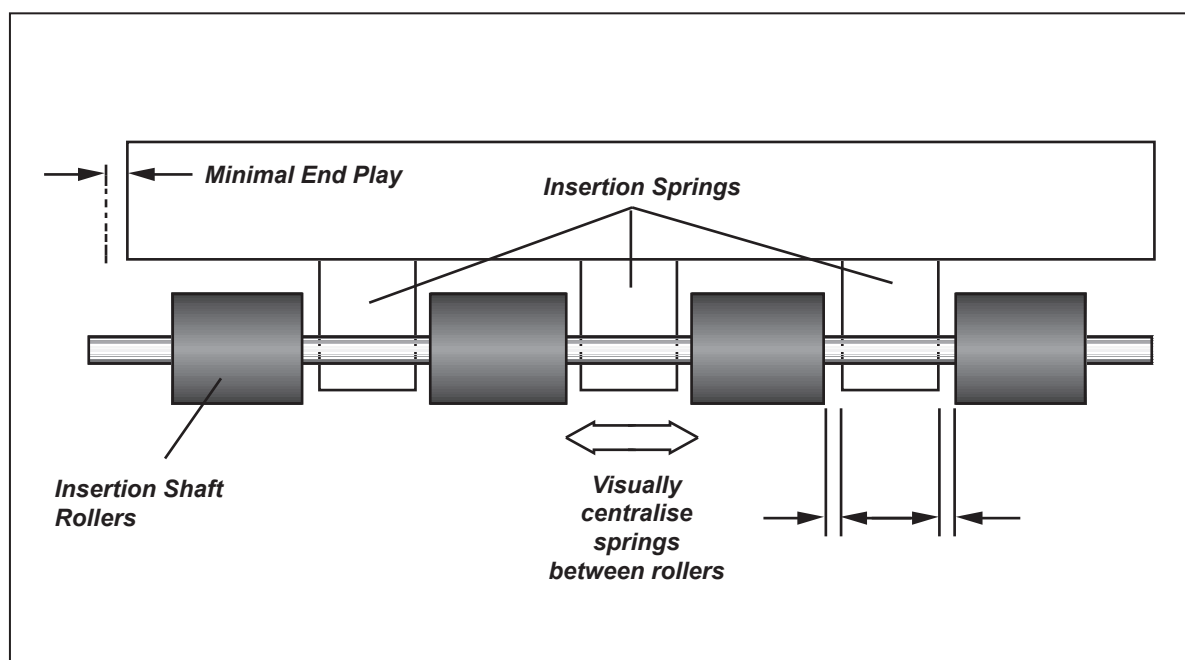
1. Adjust the Limit Stop Screw (A) so that a gap of 1mm is achieved between the Insertion Shaft and the top side of the Hold Down Fingers.



*Hold Down Finger Rest Position*

### 5.8 TRANSPORT PIVOT PLATE END FLOAT

1. Adjust the Transport Plate end float with the pivot set screws located in both side frames. Ensure that the plate has minimal end float but is free to pivot. Also ensure that the Insertion Springs are set centrally between the Insertion Shaft Rollers by adjusting the setscrews equally on both sides. Once set, lock the setscrews with locktite or equivalent. This adjustment will allow free movement of the Transport Plate Flag.



*Transport Plate End Float*

## 5 • Adjustments

### 5.9 TRANSPORT PIVOT PLATE SETTING

Before performing this adjustment, the transport plate must be central and free moving, as described in section 5.8 above.

#### STEP 1

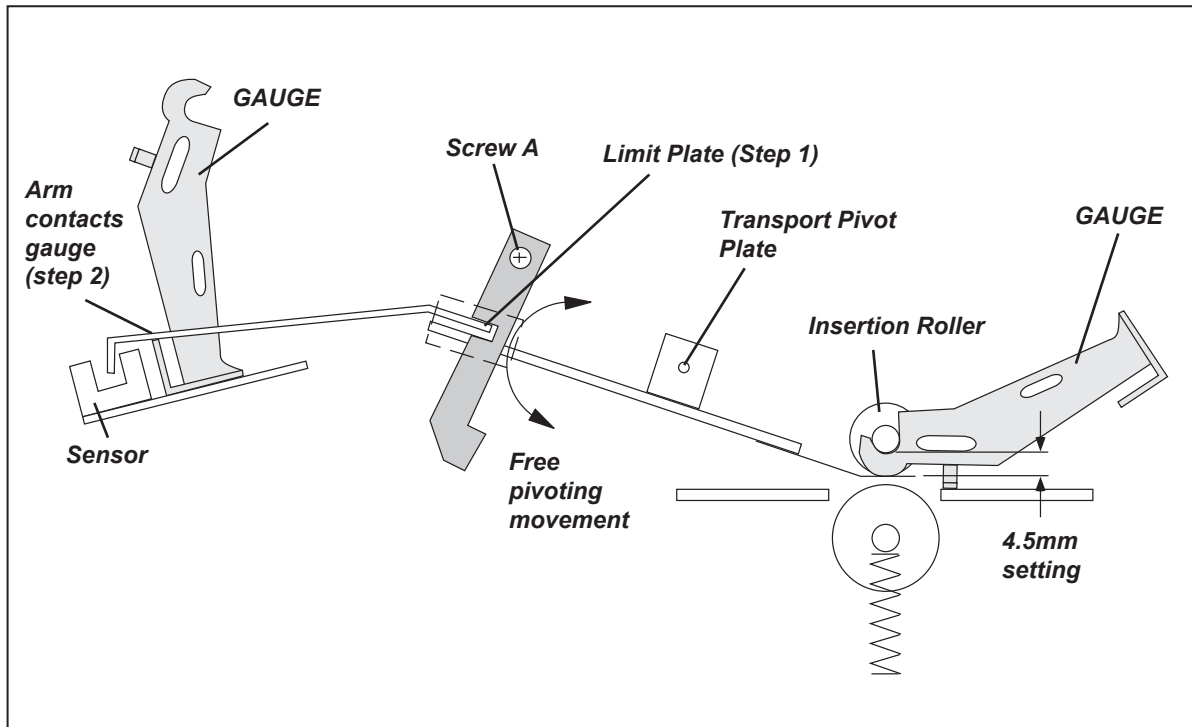
1. Remove Opto Bracket (Setting Gauge) from front frame.
2. Release screw 'A' and move limit plate fully up.
3. Position the gauge in between the insertion shaft and transport plate centre spring.
4. Move the limit plate until it touches the transport plate arm. Re-tighten screw 'A'.

This adjustment will achieve a 4.5mm gap when the transport plate is in its actuated position.

#### STEP 2

1. Re-fix the Opto Bracket (Setting Gauge), but still allow movement of the bracket.
2. Adjust the Opto Bracket until the underside of the transport plate arm contacts the leg of the bracket.

This adjustment will achieve the correct flag position in the sensor when the transport plate is in its resting state.



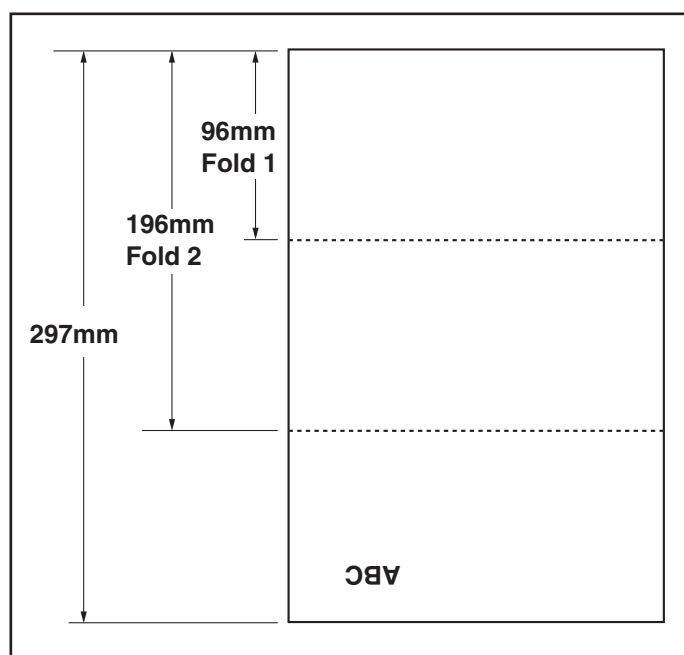
**Transport Pivot Plate Setting**

### 5.10 FOLD PLATES 1 AND 2 OFFSET

It may be necessary to set an offset value for each Fold Plate in order to make actual fold panel sizes agree with the dimensions indicated on the machine's display in setup.

For this procedure you will need to refer to the machine's display which will indicate default panel sizes for sheets of 297mm or 279mm in length. (The illustration is for a 297mm (A4) sheet with a standard fold).

Before carrying out the settings below, set the Fold 1 Offset and Fold 2 Offset in Parameters menu to zero.



*Fold Panels*

#### Step 1 - Fold Plate 1 setting

1. Make a note of Fold 1 length as displayed in job setup e.g. 96mm.
2. Run a standard 80g/m<sup>2</sup> sheet from either sheet feeder.
3. Measure Fold 1 in millimetres e.g. 98mm (2mm too long).
4. **Take the actual fold dimension and subtract the displayed job setup figure e.g. +2mm**
5. Enter this difference (positive or negative) into the Fold 1 Offset setting in the parameters menu, then leave diagnostics.
6. Run another standard 80g/m<sup>2</sup> sheet and check that the Fold 1 length in job setup now matches the actual fold length.

#### Step 2 - Fold Plate 2 setting

DO NOT carry out this adjustment until Step 1 above is successfully completed.

1. Make a note of Fold 2 length as displayed in job setup e.g. 196mm.
2. Run a standard 80g/m<sup>2</sup> sheet from either sheet feeder.
3. Measure Fold 2 in millimetres e.g. 202mm (6mm too long).
4. **Take the displayed job setup figure and subtract the actual fold dimension e.g. -6mm**
5. Enter this difference (positive or negative) into the Fold 2 Offset setting in the parameters menu, then leave diagnostics.
6. Run another standard 80g/m<sup>2</sup> sheet and check that the Fold 2 length in job setup now matches the actual fold length.

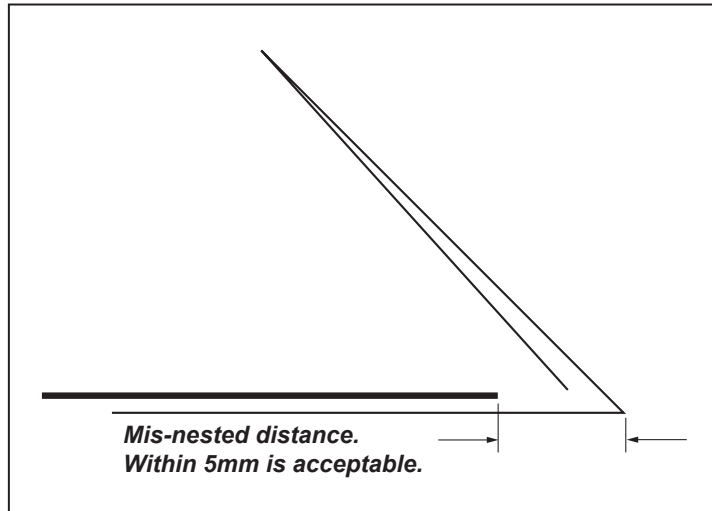
## 5 • Adjustments

### 5.11 NESTING CONSTANT

**Before proceeding with this adjustment, check that the Fold Offset is set correctly as described in section 5.10.**

The Nesting Constant adjustment sets the timing of the insert firing into a folded sheet:

1. Enter the Parameters menu and set the Nesting Constant to +12.
2. Run a cycle and open an interlock on the machine to stop the folded sheet on the Transport Plate prior to the insertion area.
3. Remove the sheet from the machine, taking care not to allow the insert to move in relation to the folded sheet.
4. The amount of mis-nesting can be checked by measuring the amount that the insert is stopping behind the lead edge of the folded sheet.
5. To correct unacceptable mis-nesting, adjust the Nesting Constant in the parameters menu.  
1 count = approximately 0.5mm.
6. Run another cycle and interrupt the machine with the sheets on the Transport Plate. Re-check the insert position and adjust again, if necessary.



**Insert Nesting Adjustment**

### 5.12 Q STATION ADJUSTMENTS

#### 5.12.1 Alignment

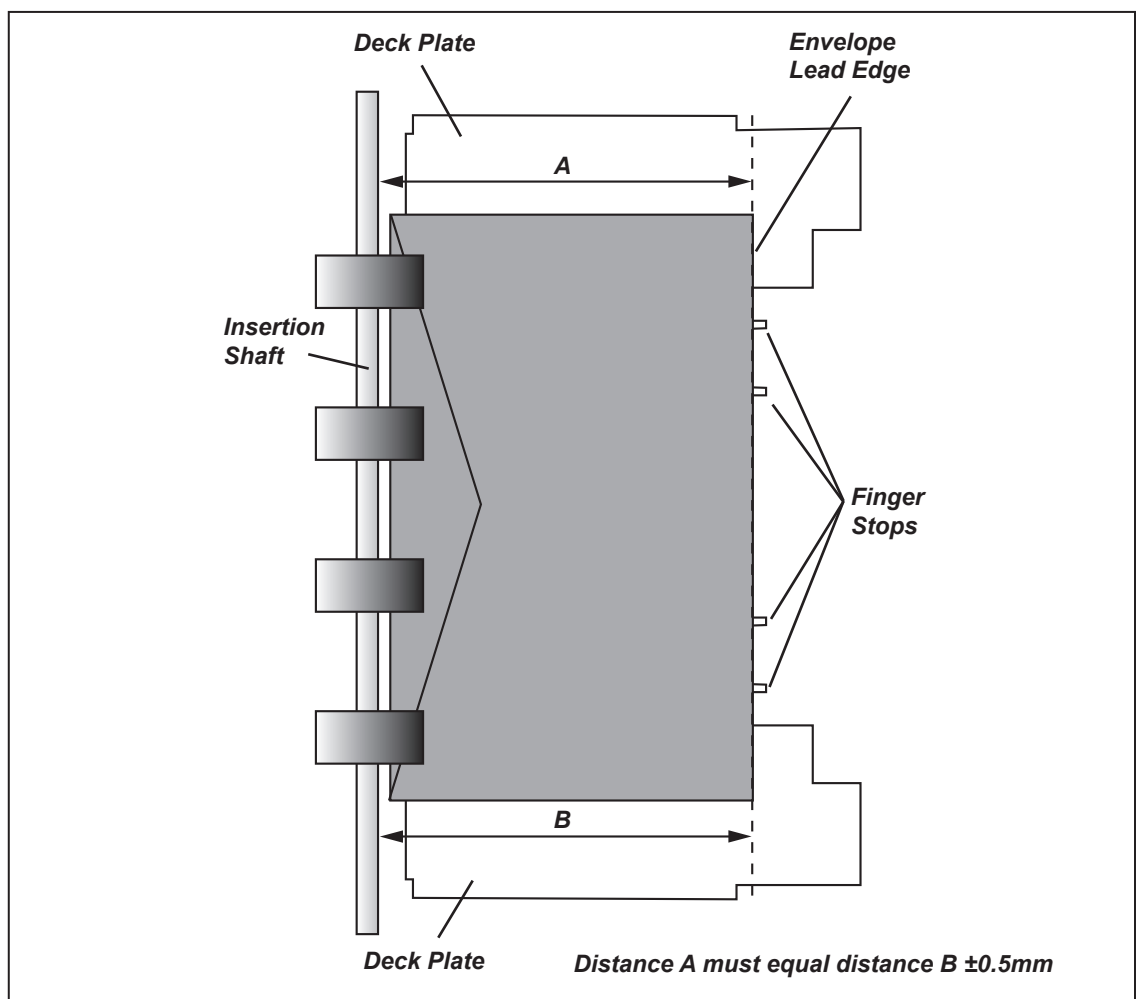
This adjustment **MUST** be carried out **BEFORE** Q Station Calibration. Refer to the illustration on the following page.

1. Enter the 'Set Parameters' menu on the display.
2. Choose 'Q Station Calibration - Finger Stop' and ensure the value is set to 130mm.
3. Place an envelope into the Q Station, ensuring that the lead edge of the envelope is touching the Finger Stops.
4. Using a ruler, measure accurately the distance from the envelope lead edge to the insertion shaft on either side of the Finger Stops (marked A and B in the illustration) and record the measurements.
5. If the difference between the measurements is greater than  $\pm 0.5\text{mm}$  (0.020"), undo the three fixing screws on the upper Q Station and adjust the alignment until it is within parallel limits.
6. Exit the 'Set Parameters' menu.

### 5.12.2 Q Station Calibration

Q Station Alignment must be completed before carrying out this adjustment.  
Refer to the illustration below.

1. Enter the 'Set Parameters' menu on the display.
2. Choose 'Q Station Calibration - Finger Stop'. A value of 130mm  $\pm 2$  will be displayed.
3. Place an envelope into the Q Station, ensuring that the lead edge of the envelope is touching the Finger Stops.
4. Using a ruler, measure accurately the distance from the envelope lead edge to the insertion shaft on either side of the Finger Stops (marked A and B in the illustration) and record the measurements. (These measurements should be within  $\pm 0.5\text{mm}$  of each other if the Alignment adjustment has previously been carried out correctly).
5. Enter the measured distance using the +/- keys.
6. Press **Start** to save the setting, then exit from Diagnostics.



**Q Station Adjustments**

## 5 • Adjustments

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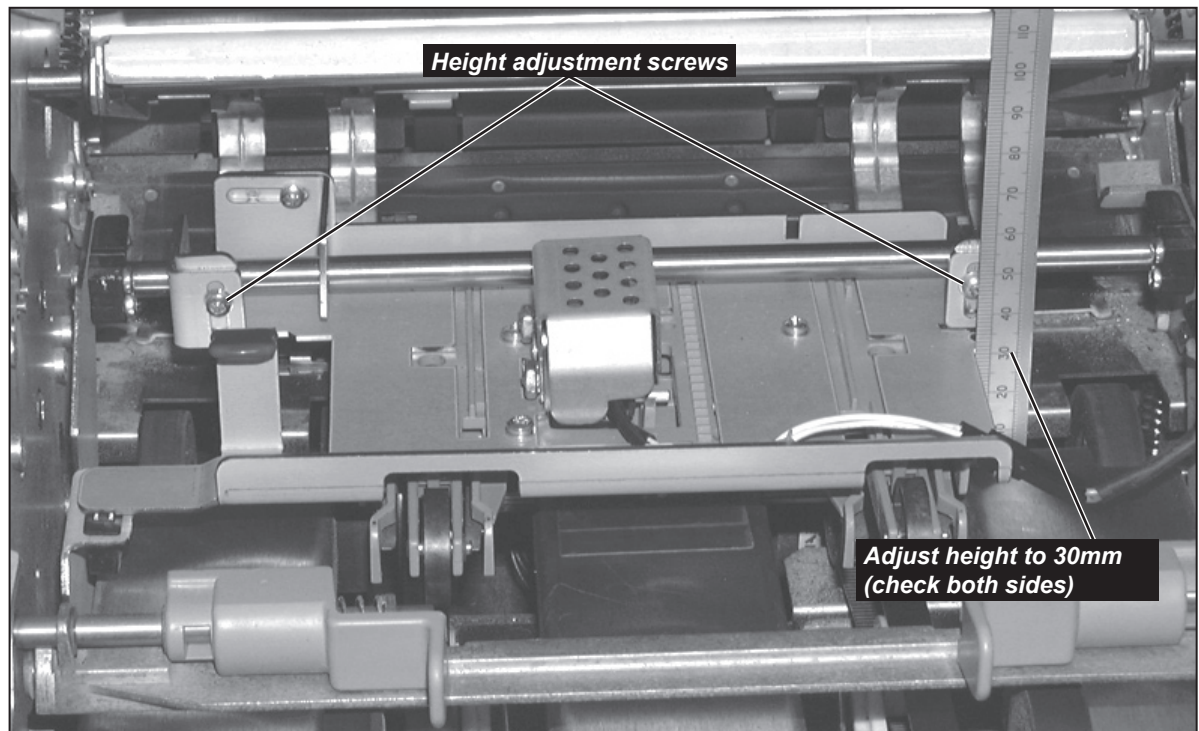
### 5.12.3 Q Station Height

This adjustment allows the height of the Q Station to be adjusted to aid in the insertion of different thickness' of collation, and to prevent overdrive of the envelope during the insertion process.

1. Loosen the two Q Station height adjustment screws.
2. Adjust the height from the deck to the top surface of the Q Station, near the pivot spindle, to a dimension of 30mm. (This is its nominal position).

3. Tighten adjustment screws.

**Note:** Ensure that both sides are of equal height.



**Q Station Height Adjustment**

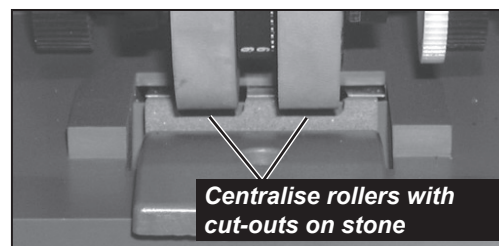


### 5.13 INSERT FEEDER ADJUSTMENTS

Carry out Insert Feeder adjustments in the following order:

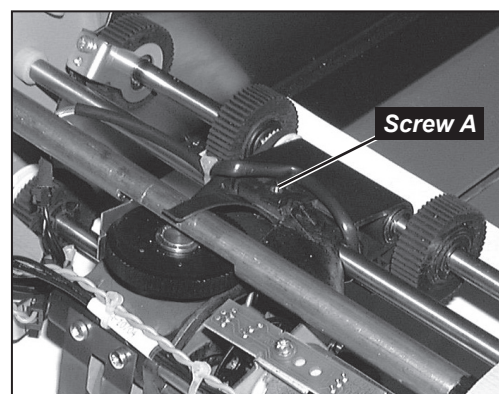
#### 5.13.1 Separator Roller Alignment

Ensure the Separator Rollers are adjusted side to side so that they are centralised with the cut-outs of the Separator Stone.



*Insert Feeder Separator Roller Alignment*

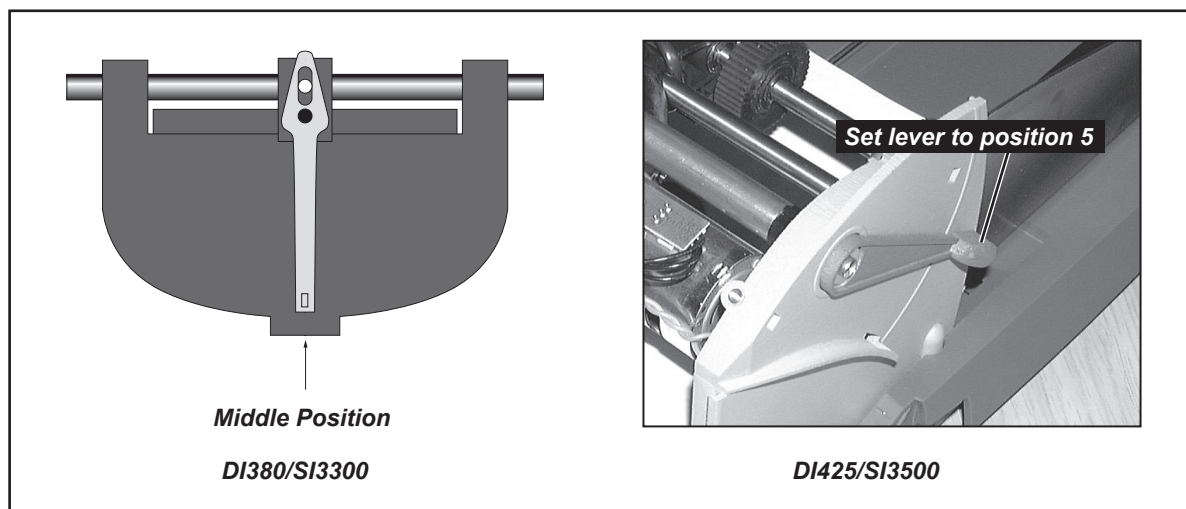
The Separator Rollers can be adjusted after loosening the allen screw **A** located close to the Thumbwheel.



*Alignment Allen Screw*

#### 5.13.2 Separator Roller Height

1. Remove the Insert Feeder Top Cover (4 screws).
2. Move the Detent setting to the middle (position 5) setting.

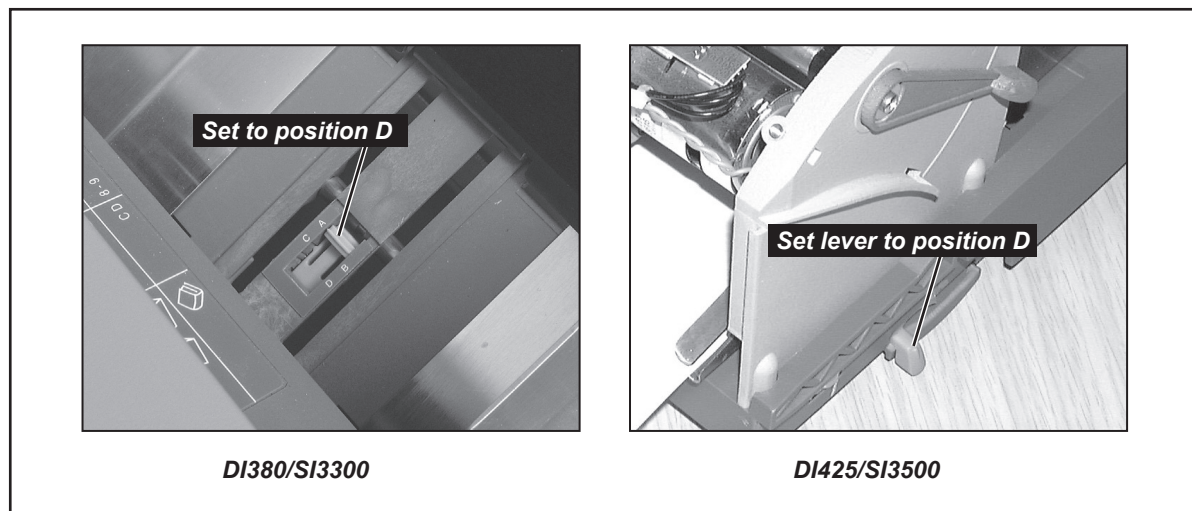


*Detent Setting*

Continued...

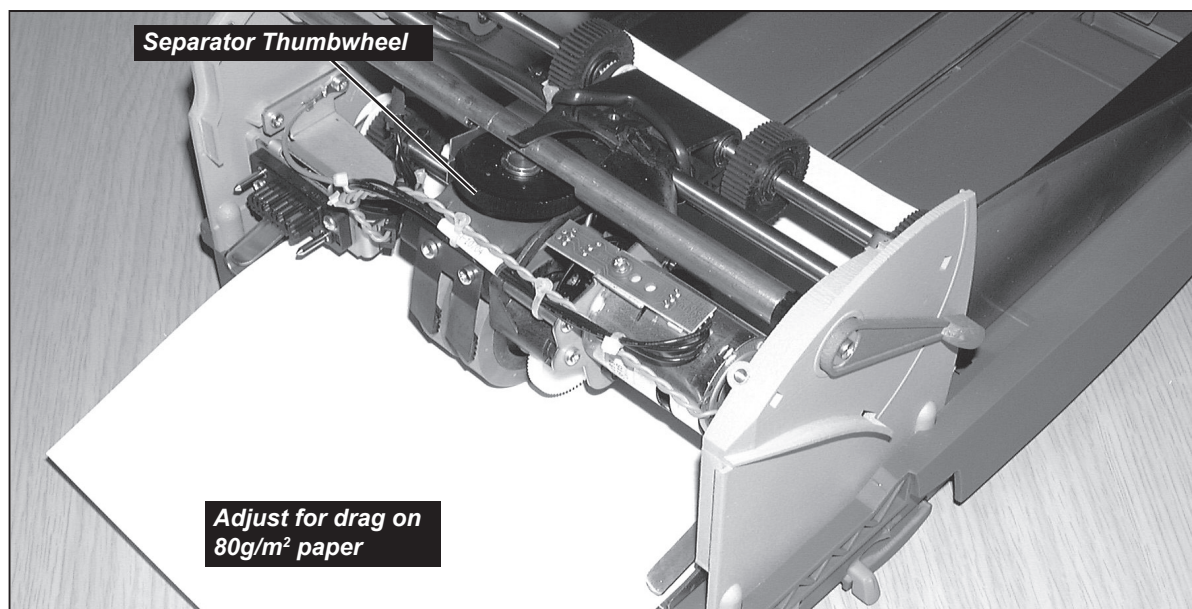
## 5 • Adjustments

3. Set Stone to position "A".



### **Separator Stone Setting**

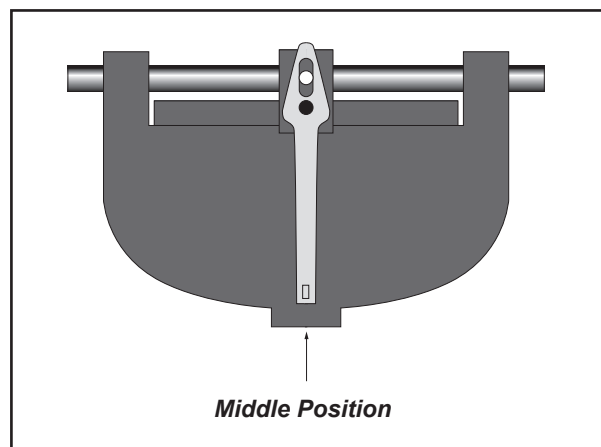
4. Loosen the allen screw locking the Separator Thumbwheel.
4. Insert a sheet of 80 g/m<sup>2</sup> paper under the Separator Rollers. Adjust the Separator Knob until you feel a slight drag on the paper, without scoring.
5. Retighten allen screw.



### **Insert Feeder Separator Roller Height Adjustment**

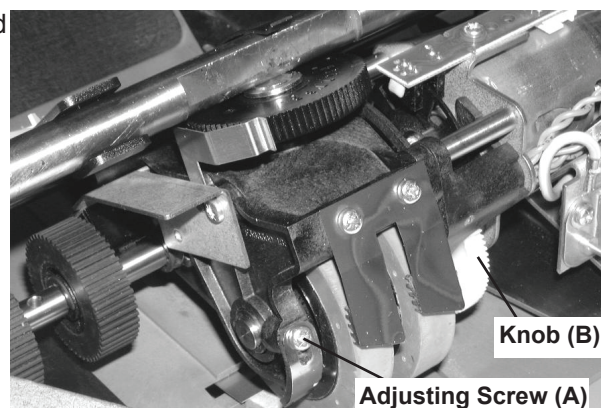
### 5.13.3 Separator Pre-Feed Height (DI380/SI3300 Only)

1. Move the Detent setting to the middle (position 5) setting.



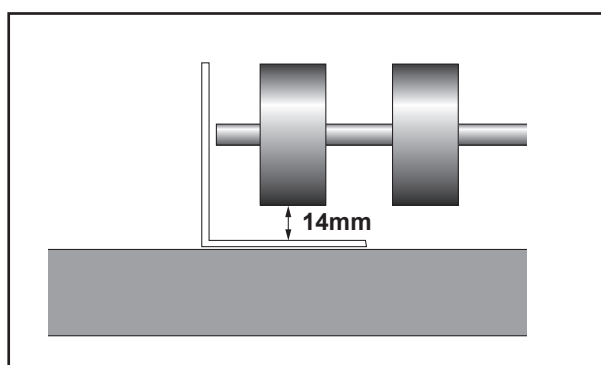
**Detent Setting**

2. Loosen adjusting screw (A) until the Pre-Feed Rollers fall and touch the deck.
3. Turn knob (B) fully open.



**Separator Pre-Feed Adjustment Points**

4. Tighten allen screw (A) until there is a gap of between 11mm and 14mm between the Insert Feeder Side Guides and the Pre-Feed Roller.
5. Reassemble the Insert Feeder.



**Separator Pre-Feed Adjustment**

**Note:** Make sure there is no interference with the side guides and the pre-feed rollers when you set the insert feeder to the minimum insert width.

## 5 • Adjustments

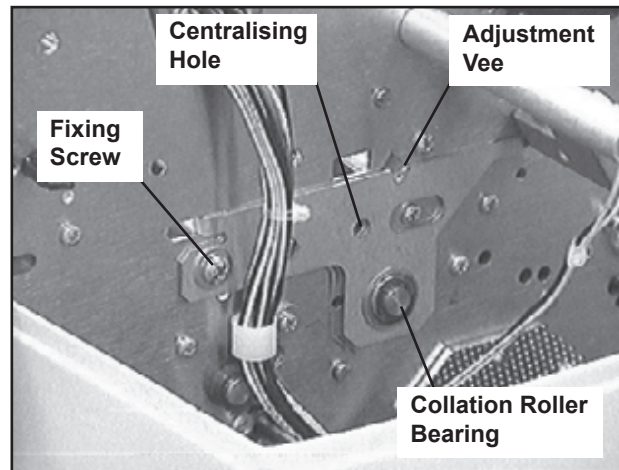
---

### 5.14 SKEW ADJUSTMENT

Skew adjustment has been incorporated into the machine to enable a badly skewed document (outside skew tolerance of 1.6mm) to be folded squarely.

To set the skew adjustment to central position, the following steps should be carried out:

1. Loosen the fixing screw.
2. Insert a 5mm dowel pin into the centralising hole.
3. Tighten the fixing screw.



**Skew Adjustment**

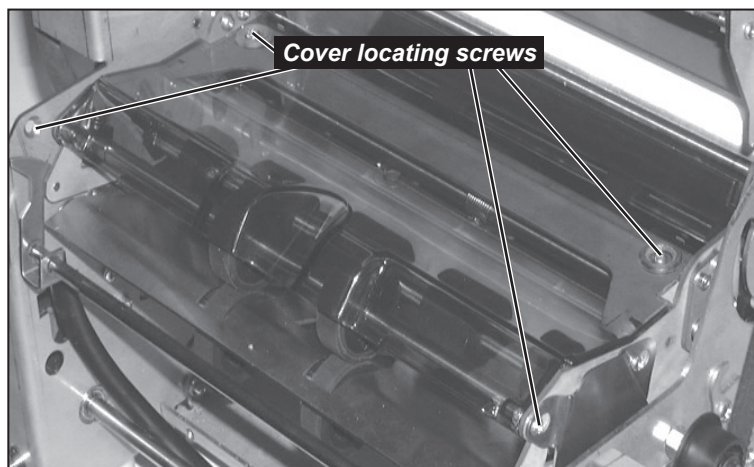
To reduce the output skew from a machine, the following steps should be followed:

1. Loosen the fixing screw.
2. Run the machine and observe the skew output.
3. Use a large flat bladed screwdriver in the adjustment vee and twist either left or right. This will shift one side of the collation roller, enabling you to correct the paper skew.
4. Once the output skew has been reduced to an acceptable level, retighten the fixing screw



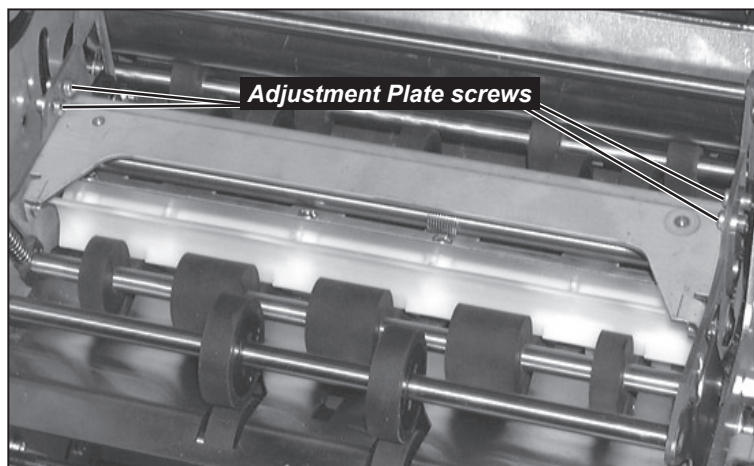
### 5.15 FLAPPER ADJUSTMENT

1. Remove the flapper assembly cover, (four screws).



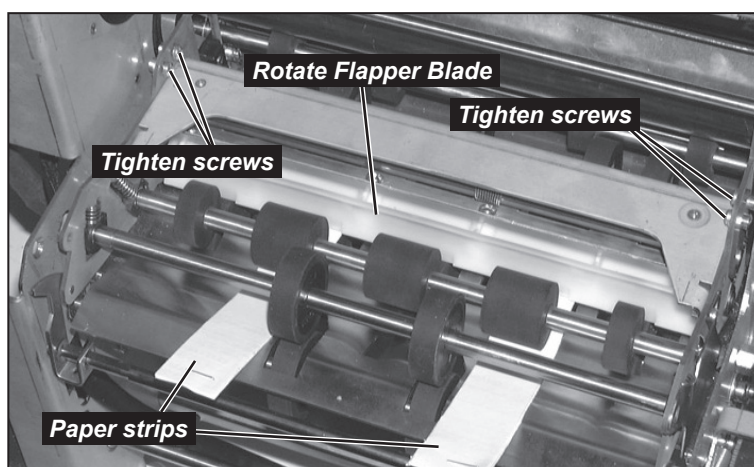
*Flapper Assembly Cover*

2. Loosen the adjustment plate screws, (2 each side). DO NOT REMOVE.



*Adjustment Plate Screws*

3. Place 0.5 to 0.8mm spacers (5 to 8 strips of 80g/m<sup>2</sup> paper) on top of the 2nd and 4th arching rollers.
4. Close the flapper assembly, then rotate the flapper blade until it touches the spacers and resistance is felt.
5. Tighten the adjustment plate screws, both sides.
6. Remove spacers and replace cover.



*Adjust Flapper*

## 5 • Adjustments

---

## 6.1 A BRIEF OVERVIEW OF OMR ON THIS SYSTEM

OMR sensors are fitted to the sheet feeders and are mounted within the machine case. They are easily adjustable for the following paper sizes:

- 8 inch wide
- A4
- American Letter (8-1/2 inch wide)
- Intermediate sizes (between 203mm to 215mm wide)

One sheet feeder holds sheets\* with OMR marks:

- Sheet Feeder 1 (Top or only Sheet Feeder) for C-fold and double-fold
- Sheet Feeder 2 (Bottom Sheet feeder) for Z-fold and Single-fold

\*The sheet feeder holding the sheets with OMR marks can feed multiple sheets per envelope.

The sheet feeder not holding OMR sheets can hold supplementary sheets that you can place under the selective control of the OMR sheets. You can also set up the insert feeder to be under the selective control of the OMR sheets. As a result, OMR can be used to fill an envelope with a variable number of sheets from one feeder, with or without a supplementary sheet and an insert.

A supplementary sheet and folded insert will be nested with the first sheet in the envelope. As OMR allows each envelope to contain tailored contents, the last sheet in the envelope will include address information for use with windowed envelopes to ensure that each set of sheets is addressed to the correct recipient.

OMR uses extensive error checking to provide an extremely low possibility of the wrong set of sheets being inserted into an envelope.

The maximum overcount figure is NOT configurable. It is set in the software for a maximum of five sheets for C, Double and Z folds, and 10 for Single fold.

## 6 • OMR

### 6.2 OMR SPECIFICATIONS

The mark must be a solid black line between 1pt and 2pts thick (0.35mm to 0.7mm) and at least 10mm wide.

The marks should be printed on white paper.

The paper weight should be between 70-90gsm.

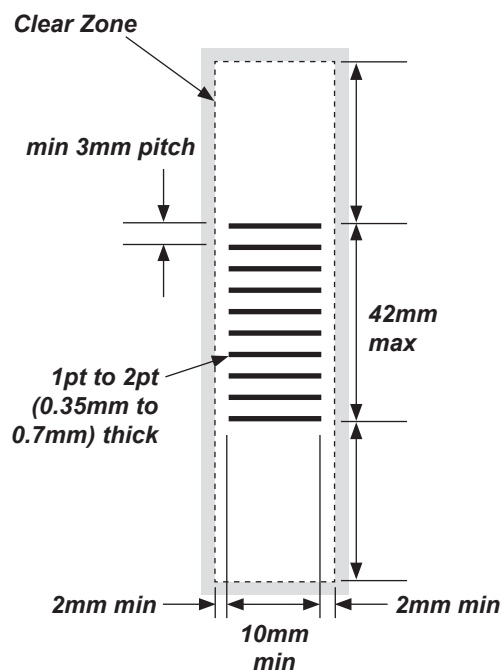
The maximum total compressed thickness of the outer envelope should not exceed 2mm.

The paper width should be 203mm to 215mm (8 to 8 1/2 in). This includes A4 and American Letter sizes.

Each mark position must be evenly spaced and at least 3mm apart.

An area around the marks should be kept clear from print, etc. that may be read by the scanner in error, this area is called the Clear Zone.

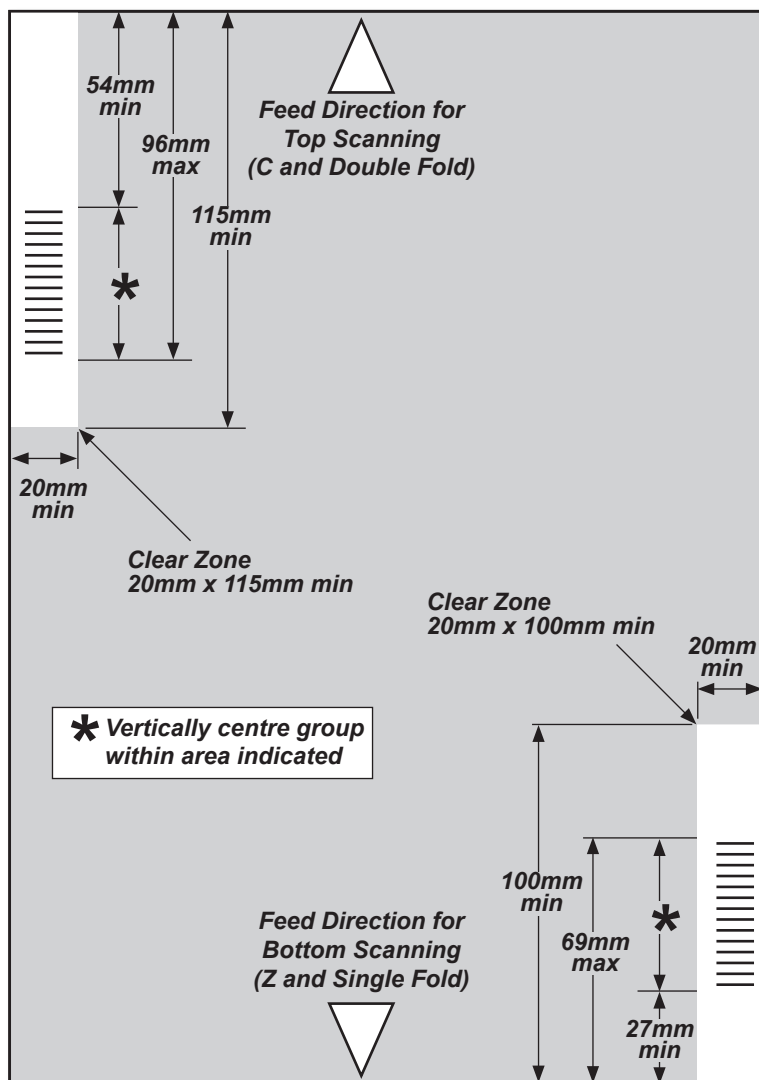
There should be no print on the opposing face of the sheet immediately behind the Clear Zone.



*Diagram NOT to scale*



### 'Standard' OMR Positions

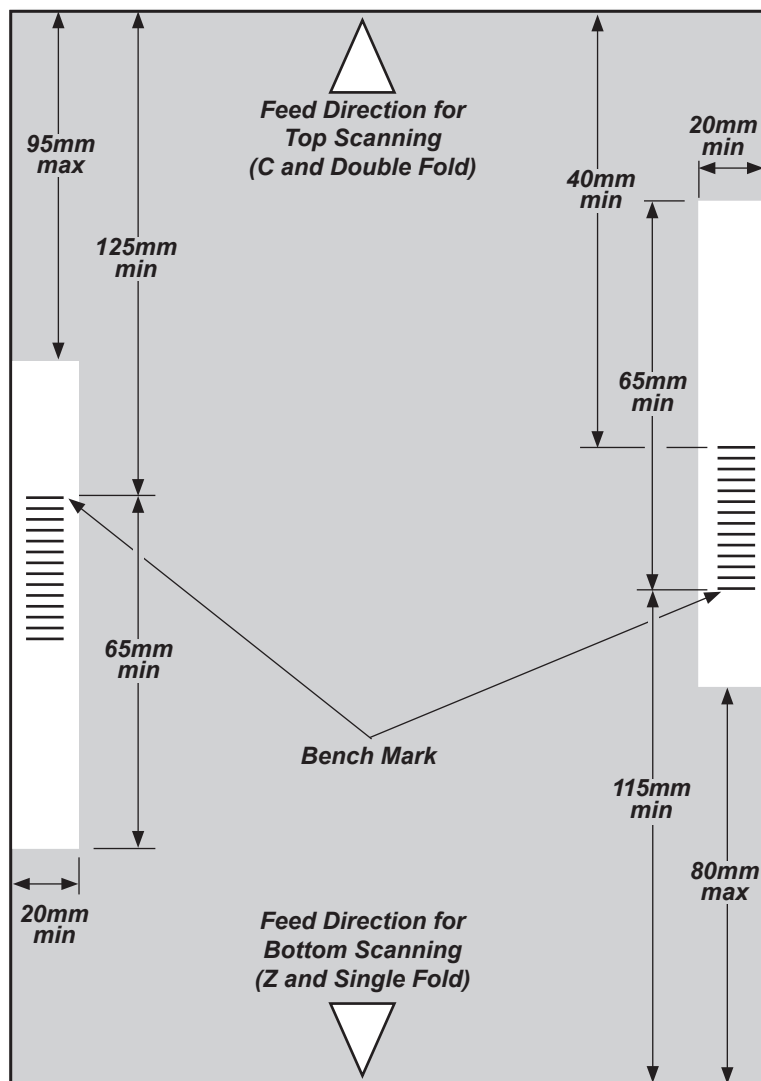


OMR marks should be positioned as follows:

'C' Fold and Double Fold: TOP SCANNING, TOP LEFT CORNER  
 'Z' Fold and Single Fold: BOTTOM SCANNING, BOTTOM RIGHT CORNER

**Diagram NOT to scale**

### 'Offset' OMR Positions



OMR marks should be positioned as follows:

'C' Fold and Double Fold: TOP SCANNING, LEFT MARGIN  
 'Z' Fold and Single Fold: BOTTOM SCANNING, RIGHT MARGIN

**Diagram NOT to scale**



To change from 'Normal Offset' to 'Swiss Offset' simply enter service parameters and scroll through until OMR Offset Feeder 2 is displayed. This value should be 115 for 'Normal Offset' and 165 for 'Swiss Offset'. Any other values entered here are not supported and may cause scanning issues.

---

**NOTE:**

Select Feed cannot be used when using 'Offset' or 'Swiss Offset', this is due to the late scanning of the code making it too late to collate the supplementary sheet or nest the insert with in the sheet. Group 2 OMR still can be used for AutoBatch.

The minimum, paper weight when using 'Offset' or 'Swiss Offset' is 80gsm.

---

## 6.3 OMR MARK GROUPING

Each OMR code begins with two fixed marks at the end nearest to the sensor (Benchmark and Safety mark). These are followed by one, two, or three groups of marks where each group comprises three data marks followed by a fixed mark. Each data mark is present or absent as required to reflect the desired function. Each code must end with a Retiming Mark.

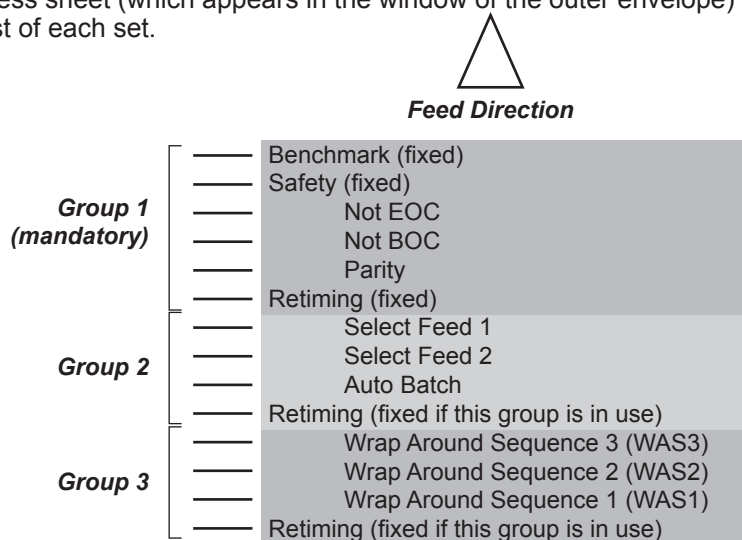
Basic OMR mode uses only Group 1.

Enhanced OMR mode uses Group 1 plus Group 2 and/or Group 3, as needed for a particular job.

### 6.3.1 'C' Fold and Double Fold jobs

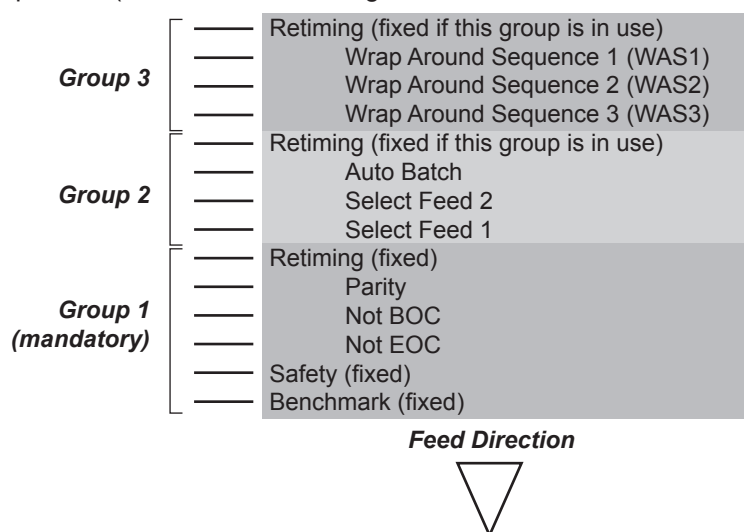
Marks must be placed in the upper left corner of the sheet. The marks must be printed in the top-to-bottom order: (The Benchmark being the mark closest to the top of the sheet).

Sheets must be printed in reverse collation order. Therefore, the last sheet processed in each set is the address sheet (which appears in the window of the outer envelope) and the first sheet processed is the last of each set.



### 6.3.2 'Z' Fold and Single Fold jobs

Marks must be placed in the lower right corner of the sheet. The marks must be printed in the bottom-to-top order, (The benchmark being the mark closest to the bottom of the sheet).



Sheets must be printed in normal collation order. Therefore, the first sheet processed in each set is the address sheet (which appears in the window of the outer envelope) and the last sheet processed is the last of each set.

### 6.4 BASIC OMR

Basic OMR enables you to collate multi-page documents that vary between one and five sheets (10 sheets with Single fold and certain paper weights). It allows you to vary the number of pages per envelope in a run from envelope to another through the use of OMR marks based on the document information in the customer's database. Basic OMR does not ensure mailpiece integrity since there is minimal error checking. It should not be used for sensitive documents such as invoices.

The machine will fold each OMR sheet separately and insert it into an envelope, starting with the last sheet of the set and adding each folded sheet in turn until the address sheet has been inserted. The machine will then eject the envelope after sealing (if selected).

When using Double, C or Z folds up to five sheets from one sheet feeder may be inserted into a single envelope with or without a supplementary sheet and/or an insert. When using Single fold up to 10 sheet can inserted into a single envelope (A supplementary sheet or insert counts as 1 of these sheets).

### 6.5 BENCHMARK

This is a mandatory mark within the code and it will be the first mark scanned by the machine, it will appear on every sheet within the set.

### 6.6 SAFETY

This mark improves the integrity of the mailing, and as it is the second mark scanned, the machine will calculate the distance between the marks. Once this is done, the machine will then be able to automatically work out the length of the code.

### 6.7 BOC-(NOT) AND EOC-(NOT)

Two mark positions are allocated to this function, one (NOT-BOC) to indicate that a sheet is not the beginning of a set and one (NOT-EOC) to indicate that a sheet is not the end of a set. For a single-sheet set, neither mark is printed; for intermediate sheets in a three or more sheet set, both marks are printed.

**See Figure- Allowable Mark Combinations for Basic OMR Diagram (Pg 6-9)**

For both C/double and Z/single fold jobs, the NOT-EOC mark is printed on every page but the first page of each collated set (the address-bearing page, whose address appears through the window of the envelope), which will always be the last page fed into the inserter. The NOT-BOC mark is printed on every page but the first page of each collated set, which will always be the first page fed into the inserter.

### 6.8 PARITY AND OTHER CHECKS

The OMR code includes a parity mark and other fixed marks. The parity mark is used for error checking and is printed such that the total number of marks printed—including the parity mark, benchmark, safety mark, and retiming mark(s)—**is even**.

If an error is detected, the machine will stop with an explanatory error message and await manual recovery. Most errors will stop before the erroneous sheet has been folded to allow the operator to evaluate the error and, where appropriate, to place the sheet back in the feeder and in proper order, before continuing the run. Where this is not possible, the Clear Deck button will eject the unsealed envelope and any sheets in transit. The machine will then allow the user the choice of manual review of remaining sheets or automatic folding and ejection of any remaining sheets of the current set.

## 6.9 RETIME MARKS

Retime Marks are necessary for reliable reading of the code, due to the paper speed varying as it feeds. With Basic OMR only the first Retiming mark is needed, if one or both of the other groups are used the Retime Mark associated with that group(s) must also be printed. Retime Marks must be print on every sheet with in the prime set.

**NOTES:** The beginning sheet of a set is defined as the first to be picked up and fed. This is always the last logical page of a document, whether reverse-collated in Sheet Feeder 1 or forward-collated but face down in Sheet Feeder 2. Similarly, the end sheet of a set is defined as the last to be picked up and will always be the address sheet.

After clearing the deck and before continuing the run, the user has only to complete the current set manually and to ensure that the top sheet in the OMR sheet feeder is the last one of the next set to be processed.

## 6.10 ALLOWABLE MARK COMBINATIONS

Collated Set—One Page Document		
Page 1 of 1		_____ Benchmark (fixed)
		_____ Safety (fixed)
		_____ Not EOC
		_____ Not BOC
		_____ Parity
		_____ Re-timing (fixed)
Collated Set—Multiple Page Document		
First Page of Set (Last Page Fed)		_____ Benchmark (fixed)
		_____ Safety (fixed)
		_____ Not EOC
		_____ Not BOC
		_____ Parity
		_____ Re-timing (fixed)
Middle Page(s)		_____ Benchmark (fixed)
		_____ Safety (fixed)
		_____ Not EOC
		_____ Not BOC
		_____ Parity
		_____ Re-timing (fixed)
Last Page of Set (First Page Fed)		_____ Benchmark (fixed)
		_____ Safety (fixed)
		_____ Not EOC
		_____ Not BOC
		_____ Parity
		_____ Re-timing (fixed)

Allowable mark combinations for Basic OMR



### 6.11 ENHANCED OMR

Enhanced OMR allows you to stop feeding sheets at selected points in a run and/or to select whether the other feeders are used—separately for each envelope. It also provides a higher level of mailpiece integrity so that sensitive documents are not sent to the wrong customer.

### 6.12 AUTO-BATCH

Enhanced OMR adds an Auto-Batch mode to supplement the normal OMR batch mode. This can be used to stop the OMR at predefined points in the run, for example, between addresses with different post codes, at tray breaks, or to identify pieces for special handling (such as a hand signature). An OMR mark, derived from the print database, specifies whether or not to stop the run after completion of the current set.

This mark if printed, must be present on all sheets within that set

*For Auto-Batch mode, use Group 1 and Group 2 marks and optionally Group 3.*

### 6.13 SELECTIVE INSERTION

Selective Insertion allows you to specify whether to include a supplementary sheet from the other sheet feeder using Select Feed Mark 1, or if the set is to include an item from the insert feeder (such as a card, business reply envelope, or folded insert), Select Feed Mark 2 must be printed.

If Select Feed 1 Mark is printed, the supplementary sheet will be folded with the first sheet of the prime set and if Select Feed Mark 2 is printed, a folded insert will be nested with it.

When using Select Feed, the mark(s) must be printed on all of prime sheets with in the relevant set.

Limits on paper dimensions and weights remain as currently specified for the OMR in Section 2, the Specifications section of this manual.

*For Selective Insertion, use Group 1 and Group 2 marks and optionally Group 3.*

### 6.14 WRAP-AROUND SEQUENCE

A series of three OMR marks can be used to implement a sequential count across a print run. These wrap-around sequence marks ensure a higher level of integrity by counting in a binary sequence, sheet by sheet, in order to detect missing or misplaced sheets. If the OMR detects a break in the sequence (non-consecutive marks), it stops and displays an error message. For example, the inserter would stop if the printer had picked up two sheets when printing a page, or if the pages have been disturbed and are out of order, or if the OMR picks up two sheets while its double-detect feature is not in use. So that a run can be restarted at any suitable point, the OMR assumes that the first sheet it picks up on starting a run is correct and checks for sequential marks thereafter.

Wrap-around sequence counts from 0 to 7, then back to 0 again 7 (Incrementing in order), so every page is accounted for. See Table on the next page.

## 6.15 WRAP-AROUND SEQUENCE MARKS

Counting Sequence	OMR Mark	Page Number <i>Example: 5-page Document</i>
0	All three WAS marks are absent	Page 5
1	WAS1	Page 4
2	WAS2	Page 3
3	WAS1 + WAS2	Page 2
4	WAS3	Page 1
5	WAS3 + WAS1	Page 5
6	WAS3 + WAS2	Page 4
7	WAS1 + WAS2 + WAS3	Page 3
0	All three WAS marks are absent	Page 2
1	WAS1	Page 1
2	WAS2	And so on...

WAS1 is always the mark position closest to the final re-timing mark. The WAS marks count up as you go down the stack, therefore they count down as the document page numbers increase because the documents are reverse-stacked (for C-fold and double-fold) or forward-stacked but face down (for Z-fold and single-fold).















*For Wrap-Around Sequence, use Group 1 and Group 3 marks and optionally Group 2.*

*If Group 2 Marks are not used with in the code, Group 3 marks can be moved up next to group 1 marks.*

### 6.15.1 Mark Code Interpretation

Marks for EOC and BOC are specified in negated form. Each OMR code must begin with a benchmark followed by a safety mark and must end with a re-timing mark. The benchmark and safety mark are used by the software to determine the mark spacing for the rest of the code. The re-timing marks are used to minimize the chance that a code is misread and also as part of an error correction algorithm. Additional re-timing marks separate the data marks into three groups of three as follows:

*Basic OMR uses only Group 1. Enhanced OMR uses Group 1 plus Group 2 and/or Group 3.*

Group 1 (mandatory)		Benchmark (fixed)
		Safety (fixed)
		Not EOC —this mark should be on all except the last sheet of a collation
		Not BOC —this mark should be on all except the first sheet of a collation
		Parity—set if necessary to give this code EVEN parity
Group 2		Re-timing (fixed)
		Select Feed 1—on all sheets of a collation that includes a supplementary sheet
		Select Feed 2—on all sheets of a collation that includes an insert
		Auto-Batch—on all sheets of the last collation of a batch
Group 3		Re-timing (fixed if this group is in use)
		Wrap-Around Sequence 3 (WAS3)
		Wrap-Around Sequence 2 (WAS2)
		Wrap-Around Sequence 1 (WAS1)
		Re-timing (fixed if this group is in use)

Identifying the OMR marks for 3 Series

Basic OMR uses only group 1. Enhanced OMR uses group the Group 1 plus Group 2 and / or Group3. Always include the Group 1 in an OMR code. You may include either or both of the second and third groups if these features are needed for a particular job. If the Auto-Batch function is used, the mark must appear on each sheet of the last set of a batch printed in reverse-collation, and on the first set of a batch printed in forward-collation.

### 6.16 ENABLING THE OMR FEATURES

#### 6.16.1 Basic OMR

To enable the Basic OMR option:

1. Open the hinged cover to the right of the OMR display.
2. Press the **Change** button (+/-) to enter Access Code 17.
3. Press the **Next** ( ► ) button until the option Set Parameters appears, then press the Start button.
4. Press the **Next** ( ► ) button until the option Select OMR Basic Mode appears, then press the Start button.
5. The display shows OMR Basic Mode Is OFF. Press the **Change** (+/-) button until the display shows OMR Basic Mode is ON. Press the **Stop** button. This enables Basic OMR.
6. Exit Set Parameters per your usual procedures.

#### 6.16.2 Enhanced OMR

Enhanced OMR includes the Basic OMR features plus selective feed, auto-batch and wrap-around sequencing (WAS). These Enhanced features are not accessible and are not displayed in menus for OMR machines configured for Basic OMR.

If the customer has purchased the Enhanced OMR option, the Pitney Bowes Service Representative enables the full set of OMR features through the Service Setup menu by entering the passcode **350350** when prompted.

Do NOT give this passcode to the customer.

To enable the Enhanced OMR option:

1. Open the hinged cover to the right of the OMR display.
2. Press the **Change** button (+/-) to enter Access Code 17.
3. Press the **Next** ( ► ) button until the option Set Parameters appears, then press the **Start** button.
4. Press the **Next** ( ► ) button until the option Set Enhanced OMR Mode appears, then press the **Start** button.
5. The display indicates Count: 0. Press the **Change** button (+/-) until the count reads **350350**. This is the code that enables Enhanced OMR. Press the **Start** button. The display shows Enhanced OMR Mode Is ON.
6. Exit *Set Parameters* per your usual procedures.

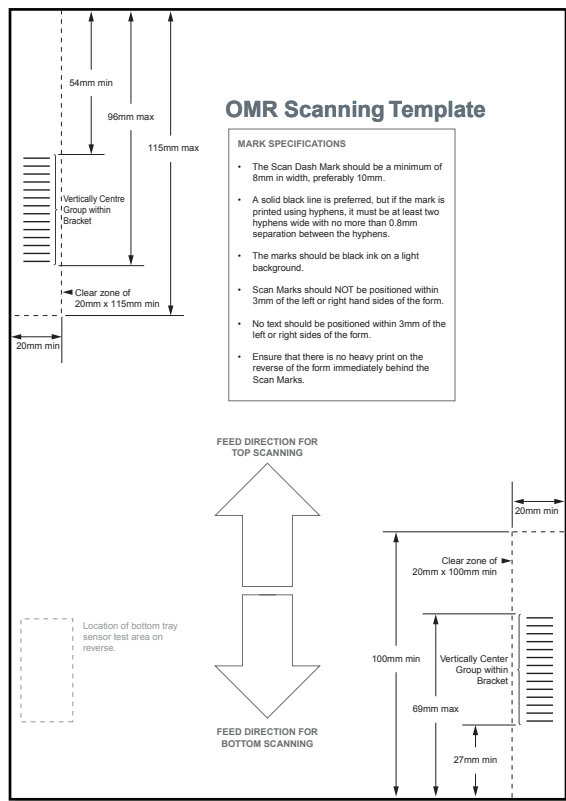
#### 6.16.3 Switching Off OMR

To switch off enhanced OMR:

1. Open the hinged cover to the right of the OMR display.
2. Press the **Change** button (+/-) to enter Access Code 17.
3. Press the **Next** ( ► ) button until the option Set Parameters appears, then press the **Start** button.
4. Press the **Next** ( ► ) button until the option Set Basic OMR Mode appears, then press the **Start** button.
5. The display shows OMR Basic Mode Is OFF. Press the **Change** (+/-) button until the display shows OMR Basic Mode is ON. Press the **Stop** button. This enables Basic OMR.
6. Exit Set Parameters per your usual procedures.
7. Both Basic and Enhanced OMR will now be switched Off.

## 6.17 SCANNING TEMPLATE

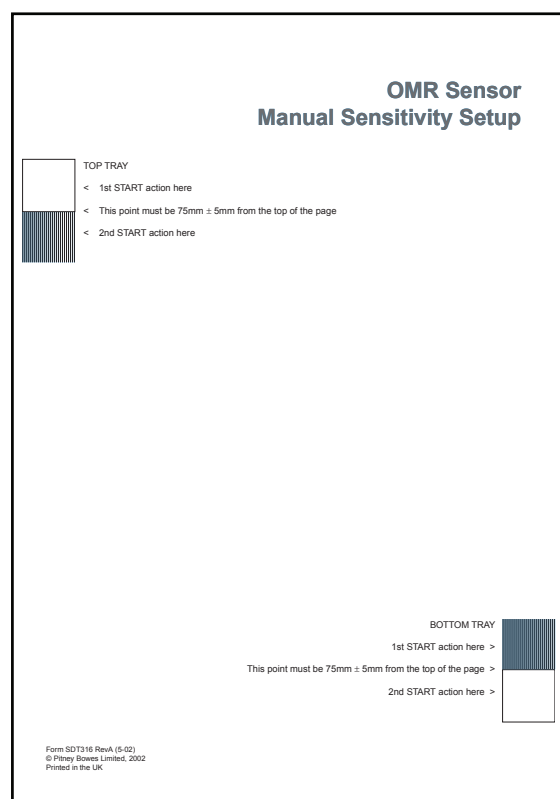
A combined Scanning Template and OMR Sensor Set-Up document is available from IDC stock under form number SDT316. For your information, a reduced size reproduction is shown below:



Front of SDT 316

Rear of SDT 316

Section 7.4.3 of this document shows how to Calibrate the Sensitivity of OMR Sensors.



### 6.18 PROCEDURE FOR MANUALLY SETTING THE SENSITIVITY OF THE OMR SENSORS

#### Introduction

It is not normally necessary to change the sensitivity of the OMR scanning sensors on Sheet Feeders 1 and 2, as they are adjusted on the Production line. Should the customer's application change, whereby the material colour changes or the scanner appears not to function correctly, then it will be necessary to perform the sensitivity adjustment.

The set-up sheet, form number SDT316 is required when making this adjustment. A reduced size reproduction of this sheet is shown in item 6.11 on page 6-17 of this document. Scanner **MUST** be positioned correctly over the centre of the scan dash marks.

#### Procedure

1. Press Set Up key under the control panel.
2. Enter 61 and press the Next key.
3. Select either Sheet Feeder 1 or 2 using the Next key.
4. Display will show Set OMR Sensitivity Sheet 1 or 2 as selected.
5. Press the Start key.
6. Using the Next key, select Manual OMR Set-up Sheet 1 or 2 as selected.
7. Press the Start key. Display will show Load Blank Sheet: START.
8. For Sheet Feeder 1, place a BLANK sheet of paper under the set-up sheet. Manually advance the set-up sheet until the "Blank" box is under the sensor.
9. Press the Start key. Display will show Load Marked Sheet: START.
10. The sensor light output will pulse slowly in Red. Now manually advance the set-up sheet until the grey (hatched) area is under the sensor.
11. Press the Start key.
12. The sensor light output will now be permanent (steady) in either Blue, Red or Green depending upon the paper colour and ink type. Normally for black OMR marks on a white background, expect to see a Blue light.
13. If the sensor light output flashes rapidly, set-up has failed, and it will be necessary to re-adjust from the beginning of the procedure.
14. The procedure for Sheet Feeder 2 is the same as for Sheet Feeder 1. However, as the Scanning sensor is mounted below the paper path, it is recommended that you remove Sheet Feeder Tray 1 for easier access. The front of the Set-Up Sheet SDT316 shows the outline of the "Blank" and "Grey" boxes on the rear of the sheet so that you can easily set its position above the scanning sensor.

# 7 • Service Menu & Troubleshooting

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Prior to any fault finding actions the technician should, where possible, check the job settings and materials that are being used with the operator.

## 7.1 ENTERING THE SERVICE MENU

1. Press the **"Setup"** key under the right control panel cover.
2. Enter **"17"** and press the **"Next"** key.
  - To enter a test press **"START"**
  - To exit the test press **"STOP"**
  - To scroll through the tests use the **"Prev"** and **"Next"** Keys
  - To change any settings use the **" +/- Change "** Keys
  - To save any setting press **"START"**

## 7.2 PARAMETERS MENU

The parameters menu allows the engineer to change the NVM settings that are set as defaults by the factory.

**Note:** The settings are unique to every machine. They are recorded on the inside of the Collation Top Cover. This record should be updated when any setting(s) are changed.

### 7.2.1 Final Assembly Number

This is to set the machine's configuration:

- F3E1 = DI380 EAME 1-station
- F3E2 = DI380 EAME 2-station
- F3E3 = DI380 EAME 3-station
- F3E4 = DI380 EAME 1-station OMR
- F3E5 = DI380 EAME 2-station OMR
- F3E6 = DI380 EAME 3-station OMR
- F3F1 = DI425 EAME 1-station
- F3F2 = DI425 EAME 2-station
- F3F3 = DI425 EAME 3-station
- F3F4 = DI425 EAME 1-station OMR
- F3F5 = DI425 EAME 2-station OMR
- F3F6 = DI425 EAME 3-station OMR

**Note:** If the configuration is changed via the Final Assembly Number all jobs previously stored will be deleted.

## 7 • Service Menu & Troubleshooting

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### 7.2.2 Set Default Job

This sets the Default Job 0 (Zero).

### 7.2.3 Set 50/60Hz

To set the frequency of the Mains supply. Factory set.

### 7.2.4 Serial Interface

- Meter Interface used for online solutions
- Event Logging- Used by Engineering to monitor OMR and Software processing
- OMR Data Logging- Used by Engineering to monitor OMR and Software processing

### 7.2.5 View Error codes

This allows you to view the last 10 Error Codes (E01 – E126).

### 7.2.6 Set DDD

This sets the position of the reference point of the DDD.

Sheet feeders 1 and 2:

- Leading Edge
- Sample At Middle
- Trail edge

Insert feeder:

- Leading Edge

### 7.2.7 Set Service Counter

This sets the software counter: For EIU use only.

### 7.2.8 Set Out of Material

This setting allows the Out of Paper sensors to be switched on or off for the sheet feeders, envelope feeder and the insert feeder.

### 7.2.9 Set Nesting Constant

This is the timing of the insert being fed into the second fold panel. Initially set by the factory.

- DI425/SI3500 = 12
- DI380/SI3300 = 12



### 7.2.10 Calibrate Q Station

This is to set the position of the envelope stops. Initially set by the factory.

- DI425/SI3500 = 130
- DI380/SI3300 = 130

### 7.2.11 Set Fold Plate Offsets

This is to offset the fold panel lengths to match the lengths programmed in by the customer. Initially set by the factory.

- Fold Plate 1
- Fold Plate 2

### 7.2.12 Set Env Stop Count

This sets the timing of the inset drive solenoid to energise, which determines how hard the envelope drives into the envelope stops. Initially set by the factory.

- DI425/SI3500 = 15
- DI380/SI3300 = 15

### 7.2.13 Set Serial Number

This is to set the serial number of the machine. EIU Use only.

### 7.2.14 View Software Revision

This displays the current level of software.

### 7.2.15 Select OMR Basic Mode

When code is entered the following functions will appear.

- OMR/Acc Mode is **off**
- OMR/Acc Mode is **on**
- OMR/Acc Mode is **Acc only**

### 7.2.16 Select OMR Enhanced

Enter Code to turn on. The Extra Functions will appear in Job set up (71).

Enter code 350350 to enable enhanced OMR functionality.

### 7.2.17 Basic Wetter Constant

This sets the timing of the sealer brush to contact the envelope flap. Lower numbers contact the envelope sealer earlier. Higher numbers make the sealer brush contact the envelope later.

- DI425/SI3500 = 25
- DI380/SI3300 = 110

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### 7.2.18 OMR / Acc Wetter Constant

This function performs the same function as Basic Wetter Constant, but when OMR/ Acc is used it contacts the envelope earlier to allow for sealing of thicker packages.

- DI425/SI3500 = 25
- DI380/SI3300 = 55

### 7.2.19 T1 Clutch Release Time

This adjustment is basically a stop position for the envelope depth. European flap depths are typically deeper than standard or US envelopes. For deeper envelope flaps increase the number.

Standard setting for USA envelopes is 112.

Standard setting for European envelopes is 122.

### 7.2.20 T2 Envelope Hold Time

Default setting is 0. This adjustment is basically the Envelope Hold time. Set to a slightly higher figure if the glue needs longer to break down.

- DI425/SI3500 = 0 (Safe Seal Clutch), 1 (Without Safe Seal Clutch)
- DI380/SI3300 = 0 (Safe Seal Clutch), 1 (Without Safe Seal Clutch)

### 7.2.21 T3 Table Offset

Default setting is 0. Do not change this setting. The software measures the number of pages in collation in order to determine whether or not the envelope should be held in the sealer area or not.

- DI425/SI3500 = 0
  - DI380/SI3300 = 0
- See OMR Template.

### 7.2.22 OMR Offset Feeder 1

- DI425/SI3500 = 125
- DI380/SI3300 = 125

### 7.2.23 OMR Offset Feeder 2

- DI425/SI3500 = 115 (Swiss Offset = 165)
- DI380/SI3300 = 115 (Swiss Offset = 165)

### 7.2.24 Clear Deck Delay

The Clear Deck function is inhibited until the Inserting Machine has been stopped for a period of time to ensure that the Mailing Machine has processed all mail and stopped before clear deck is carried out. This avoids the operator transferring material from the Inserting Machine through the Mailing Machine and applying a frank to this material.

The time is adjusted in the Inserting Machine and Mailing Machine so the Mailing Machine deck rollers and sensors stop being active before the Clear Deck function is carried out in the Inserting Machine.

The time is adjustable on the Inserting Machine through a new service parameter. The parameter range is 0 to 101 seconds with a default value of 20 seconds.

The time is set on the Mailing Machine through the operations screen and timeouts menu. It is advised that the timeout for the Mailing Machine is less than the Inserting Machine.

- DI425/SI3500 = 20
- DI380/SI3300 = 20

### 7.2.25 MMI Stack Limit

This is the number of envelopes that can be stacked on the deck of the Mailing base. This should only be adjusted dependant on the thickness of the envelopes.

- DI425/SI3500 = 4
- DI380/SI3300 = 4

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### 7.3 SERVICE DIAGNOSTICS

Diagnostics allows the engineer to test every component by using the control panel.

**Normal state** shows the state of the sensors with all feeders and fold plates fitted and with no material loaded in the machine.

#### 7.3.1 Test Sensors

See section 7.4.2 for instructions on how to test.

	Normal State	
<b>Test DDD Sensors</b>		
• Sheet Feeder 1	255	
• Sheet Feeder 2	255	
• Insert Feeder	255	
<b>Test Tray Sensors</b>		
• Sheet Feeder 1	Clear	
• Sheet Feeder 2	Clear	
• Insert Feeder	Clear	
• Envelope	Clear	
• Daily Mail	Off/On	
• Insert Feeder Interlock	Blocked	
• Envelope Load Switch	Off/On	DI425/SI3500 ONLY
<b>Test Paper Sensors</b>		
• Transport Plate	Clear	
• Envelope Feed Sensor	Clear	
• Envelope Lead Edge Sensor	Clear	
• Moistener	Clear	
• Exit Sensor	Clear	
<b>Test Home Positions</b>		
• Fold Plate 1	Clear	
• Fold Plate 2	Clear	
• Q Station	Clear	
• Inverter	Clear	
• Half Fold ON	Blocked / Clear	
• Half Fold OFF	Clear / Blocked	
• Envelope Platform Up	Clear / Blocked	DI425/SI3500 ONLYYY
• Envelope Platform Down	Blocked / Clear	DI425/SI3500 ONLY
<b>Test Interlocks</b>		
• Hand Crank Interlock	Closed	
• Fold Plate 1 Interlock	Closed	
• Fold Plate 2 Interlock	Closed	
• Collation Interlock	Closed	
• Flapper Cover Interlock	Closed	
• Seal Cover Interlock	Closed	
• Moistener Cover Interlock	Closed	
• Water Level	Full/Empty	

### 7.3.2 Test UART

This is a Loop Back Test for the RS232 serial port. EIU Use only.

### 7.3.3 Test D.C. Motors

#### **Start Motor**

To test the motor press “**START**”.

“**START**” will switch the motor On and Off.

The motor will automatically switch off after 7 seconds.

- Sheet Feeder 1
- Sheet Feeder 2
- Collation
- Insert Pref
- Insert Drv
- Envelope

#### **Start Motor Count & Stop**

For this test, enter the number of encoder counts and press “**START**”.

**Note:** When testing lead screws be careful not to over-drive the gear to the end, as this may damage the assembly.

- Sheet Feeder 1
- Sheet Feeder 2
- Collation
- Insert Pref
- Insert Drv
- Envelope
- Q Station
- Fold Plate 1
- Fold Plate 2
- Inverter
- Half Fold
- Env Platform      DI425/SI3500 ONLY

#### **Reverse Motor Count & Stop**

- Q Station
- Fold Plate 1
- Fold Plate 2
- Inverter
- Env Platform      DI425/SI3500 ONLY
- Envelope      DI425/SI3500 ONLY
- Half Fold

#### **Test End Stops**

- Q Station
- Fold Plate 1
- Fold Plate 2
- Inverter
- Env Platform      DI425/SI3500 ONLY
- Half Fold

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### 7.3.4 Test Solenoids

To test the solenoids, press “**START**” to energise and “**START**” to de-energise. To prevent damage, the solenoid will energise only for a short time.

- Finger Solenoid
- Insert Solenoid
- Shoehorn Solenoid
- Moistener Solenoid
- Hold down Solenoid

### 7.3.5 Test A.C. Motor

This will run the A.C. motor. To run this test all interlocks must be closed.

### 7.3.6 Run Test Cycle

This will run the machine with all components being tested.

**Note:** Make sure that there is no paper loaded.

To finish test press stop.

### 7.3.7 Test Display

All icons will be displayed.

### 7.3.8 Test Clutch and A.C Motor

Press “**START**” to make the A.C. Motor run.

Toggle the “**START**” button to set the clutch on and off within this test.

### 7.3.9 Test OMR Sensors

- Tray 1 OMR Sensor                      Clear / Blocked
- Tray 2 OMR Sensor                      Blocked / Clear

### 7.3.10 Test Service Counter

When this is pressed, the machine counter increments by 1.

### 7.3.11 Test Interlock Relay

When “**START**” is pressed, the relay energizes on then off.

### 7.3.12 Test DDD Calibration

Manufacturing use only

- DDD 1
- DDD 2
- DDD 3

### 7.3.13 Select Board Type

Manufacturing use only.

### 7.3.14 Test Memory

Manufacturing use only.

- Test RAM
- Test NVM
- Test ROM

## 7.4 TROUBLESHOOTING CHARTS

### 7.4.1 General Information

If the customer contacts the service department with an error code, the technician should give information from the 'Operator Check List' column in the charts only.

If the fault cannot be rectified, then an engineer should attend the call and follow the '**Operator Check List**'. If this doesn't correct the fault, the engineer can probe more in depth using the '**Service Diagnostic**' and '**Connector and Logic Test**' columns to find a resolution.

Prior to any fault finding actions, the technician should, where possible, check the job settings and that the materials being used are within specification.

The charts on the following pages are designed to help diagnose faults quickly and as accurately as possible.

If you are fault finding using a logic probe, connect the red (+) probe clips to P36 pin 3 (5V) and the black (-) to pin 5 (GND).

A low signal represents a blocked sensor which is the normal state.  
A high signal represents an unblocked sensor.

If you are using a multimeter, connect the red (+) probe to the required board connector and the black probe to GND (chassis).

The chart below and on the following page gives expected voltages and high or low readings that can be found when testing motors, solenoids, switches and sensors.

### 7.4.2 Double Detect

No readings or signals are given for the Double Document Detect sensors. The DDD readings in normal state is 255. To test these sensors, place a single sheet between the sensor and make a note of the reading displayed. Place two sheets between the DDD sensors, this figure should drop by at least 50%.



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### 7.5 FAULT FINDING CHARTS

Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E01 Fold Plate 1 not set	<ul style="list-style-type: none"> <li>Remove fold Plate and check for jammed material.</li> <li>Check for any binds</li> <li>Check/ Clean fold plate sensor</li> </ul>	Test end stops position Test fold plate sensor OP13  Test motor count and stop for fold plate 1 M6	P29 pins 6,7,8  P17 pins 1,2 P17 pins 3,4,5	Sensor OP13  Motor M6 Encoder
E02 Fold Plate 2 not set	<ul style="list-style-type: none"> <li>Remove fold Plate and check for jammed material.</li> <li>Check for any binds</li> <li>Check/ Clean fold plate sensor</li> </ul>	Test end stops position Test fold plate sensor OP14  Test motor count and stop for fold plate 2 M7	P17 pins 6,7,8  P29 pins 1,2 P29 pins 3,4,5	Sensor OP14  Motor M7 Encoder
E03 Exit ramp not set	<ul style="list-style-type: none"> <li>Open inverter door and check for any material</li> </ul>	Test end stops position Test sensor OP6 Test motor count and stop for M11	P36 pins 3,4,5 P36 Pins1,2 P36 pins 3,5,6	Sensor OP6 PCB Motor M11 Encoder
E04 Feeder 1 empty	<ul style="list-style-type: none"> <li>Check material is loaded in feeder 1</li> </ul>	Test out of paper sensor OP9	P20 pins 19,20,21	Sensor OP9
E05 Feeder 2 empty	<ul style="list-style-type: none"> <li>Check material is loaded in feeder 2</li> </ul>	Test out of paper sensor OP10	P19 pins 12,13,14	Sensor OP10
E06 Feeder 3 Insert empty	<ul style="list-style-type: none"> <li>Check material is loaded in feeder 3</li> </ul>	Test out of paper sensor OP11	P24 pins 4,5,6	Sensor OP11
E07 Envelope Feeder empty	<ul style="list-style-type: none"> <li>Check material is loaded in envelope feeder</li> </ul>	Test out of paper sensor OP12	P14 pins 20,21,22	Sensor OP12
E08 Feeder 1 DDD blocked prior to start of a cycle	<ul style="list-style-type: none"> <li>Open top cover and check jam access plate for any material</li> <li>Close jam access plate</li> </ul>	Test DDD 1 sensor level Check alignment of DDD1 connectors	Check for 50% drop on display screen	Replace DDD sensor PCB's
E09 Feeder 2 DDD blocked prior to start of a cycle	<ul style="list-style-type: none"> <li>Remove feeder 2, and check for any material</li> </ul>	Test DDD 2 sensor level Check alignment of DDD2 connectors	Check for 50% drop on display screen	Replace DDD sensor PCB's
E10 Insert DDD blocked prior to start of a cycle	<ul style="list-style-type: none"> <li>Remove the insert feeder open the carriage complete assembly and check for any material</li> </ul>	Test DDD3 sensor level Check alignment of DDD3 connectors	Check for 50% drop on display screen	Replace DDD sensor PCB's

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Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E11 Envelope feeder sensor blocked prior to start of a cycle	<ul style="list-style-type: none"> <li>Open the flapper cover and check for any material</li> </ul>	Test envelope feed sensor S1	P14 pins 18 &19	Replace sensor S1
E12 Sheet feeder1 paper too short	<ul style="list-style-type: none"> <li>Check job set up</li> <li>Adjust the side guides</li> <li>Press the trial piece to re-calibrate</li> </ul>	Visually check the separator pad and roller		Clean/Replace the separator pad and roller
E13 Sheet feeder 2 paper too short	<ul style="list-style-type: none"> <li>Check job set up</li> <li>Adjust the side guides</li> <li>Press the trial piece to re-calibrate</li> </ul>	Visually check the separator pad and roller		Clean/Replace the separator pad and roller
E14 Insert feeder paper too short	<ul style="list-style-type: none"> <li>Check job set up</li> <li>Adjust the side guides</li> <li>Press the trial piece to re-calibrate</li> </ul>	Visually check the separator pad, roller and pre feed roller		Clean/Replace the separator pad roller and pre feed roller
E16 Feeder 1 Double feed	<ul style="list-style-type: none"> <li>Check the paper is aerated</li> <li>Adjust the side guides</li> <li>Press the trial piece to re-calibrate</li> <li>Check for any dark areas on the document</li> </ul>	<p>Visually check the separator pad and roller</p> <p>Check DDD sensor levels Change the position of the DDD position (Top, Middle, Bottom)</p>		<p>Clean/Replace separator pad and roller</p> <p>Change DDD</p>
E17 Feeder 2 Double feed	<ul style="list-style-type: none"> <li>Check the paper is aerated</li> <li>Adjust the side guides</li> <li>Press the trial piece to re-calibrate</li> <li>Check for any dark areas on the document</li> </ul>	<p>Visually check the separator pad and roller</p> <p>Check DDD sensor levels Change the position of the DDD position (Top, Middle, Bottom)</p>		<p>Clean/Replace separator pad and roller</p> <p>Change DDD</p>
E18 Insert Double feed	<ul style="list-style-type: none"> <li>Check the paper is aerated</li> <li>Adjust the side guides</li> <li>Press the trial piece to re-calibrate</li> <li>Check for any dark areas on the document</li> <li>Check orientation of the document</li> </ul>	<p>Visually check the separator pad and roller</p> <p>Check DDD sensor levels</p>		<p>Clean/Replace separator pad and roller</p> <p>Change DDD</p>

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Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E19 Material never entered and/or left the exit sensor	<ul style="list-style-type: none"> <li>Open inverter door and remove any material</li> </ul>	Test exit sensor S4	P35 pins 2 and 3	Replace sensor S4
E20 Material never entered and/or left the moistener sensor	<ul style="list-style-type: none"> <li>Open moistener sensor cover and remove any material</li> </ul>	Test moistener sensor S3	P36 pins 9 and 10	Replace sensor S3
E21 Material never released from the transport plate	<ul style="list-style-type: none"> <li>Check job set up: Fold panels and envelope depth</li> <li>Adjust the side guides</li> <li>Remove material from insertion area</li> </ul>	Test sensor OP5 Check for free movement of the transport pivot plate	P14 pins 1,2,3	Sensor OP5
E22 Sheet feeder 1 not fed to collation roller	<ul style="list-style-type: none"> <li>Check job set up</li> <li>Remove material from sheet feeder 1 and restart</li> <li>Aerate the material</li> <li>Check the side guide adjustment</li> <li>Open the top cover, open jam access cover and check for any material</li> </ul>	Test out of paper sensor OP9  Test Daily mail sensor OP3  Test Sheet feeder motor 1 Test Sheet feeder encoder Visually check the separator pad and roller Test DDD sensor levels	P20 pins 19,20,21  P23 pins 1,2,3  P21 pins 1,2 P20 pins 4,5,6  Check for 50% drop on the display screen	Sensor OP9  Sensor OP3  Motor M1 Encoder  Sensor DDD1
E23 Sheet feeder 2 not fed to collation roller	<ul style="list-style-type: none"> <li>Check job set up</li> <li>Remove material from sheet feeder 2 and restart</li> <li>Aerate the material</li> <li>Check the side guide adjustment</li> <li>Open the top cover, open jam access cover and check for any material</li> </ul>	Test out of paper sensor OP10  Test Sheet feeder motor M2 Test Sheet feeder encoder Visually check the separator pad and roller Test DDD sensor readings	P19 pins 12,13,14  P18 pins 1,2 P19 pins 1,2,3  Check for 50% drop on the display screen	Sensor OP10  Motor M2 Encoder  Sensor DDD2.

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Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E24 Insert feeder not fed to roller	<ul style="list-style-type: none"> <li>Remove material from the insert feeder and restart</li> <li>Aerate the material</li> <li>Check side guide set up</li> <li>Check separator and stone settings</li> </ul>	Test out of paper sensor OP11 Test the insert feeder motor M3 Test encoder Test the collation motor M4 Test encoder	P24 pins 4,5,6 P27 pins 1,2 P27 pins 1,2,3 P25 pins 1,2 and P26 pins 1,2 P24 pins 10,11,12	Sensor OP11 Motor M3 Encoder Motor M4 Encoder
E25 Envelope not fed to the insertion area	<ul style="list-style-type: none"> <li>Open flapper cover and remove any material</li> <li>Check the envelope feed orientation</li> <li>Make sure the flapper unit is properly closed down</li> </ul>	Test lead edge sensor S2 Test envelope sensor S1 Check the main drive belts, gear and pins	P35 pins 11,12 P14 pins 18,19	Sensor S2 Sensor S1
E26 Paper left feeder 1 but did not reach the transport plate	<ul style="list-style-type: none"> <li>Remove fold plate indicated and check for any material</li> <li>Check that the paper used matches the paper size programmed in job set up</li> </ul>	Test fold plate sensors OP13 and OP14 Test collation motor M5 Test encoder Test main fold roller drive	OP13 P29 pins 6,7,8 OP14 P17 pins 6,7,8 P22 pins 1,2 P20 pins 12,13,14	Sensor OP13 OP14 Motor M5 Encoder
E27 paper left feeder 2 but did not reach the transport plate	<ul style="list-style-type: none"> <li>Remove fold plate indicated and check for any material</li> <li>Check that the paper used matches the paper size programmed in job set up</li> </ul>	Test fold plate sensors OP13 and OP14 Test collation motor M5 Test encoder Test main fold roller drive	OP13 P19 pins 6,7,8 OP14 P17 pins 6,7,8 P22 pins 1,2 P20 pins 12,13,14	Sensor OP13 OP14 Motor M5 Encoder
E28 Motor PCB link Failure	<ul style="list-style-type: none"> <li>Power machine off/on if the fault is still present, call service</li> </ul>	Check main and motor software prompts on the main PCB	Check LED's on main logic PCB	Main PCB
E30 Sheet feeder 1 removed	<ul style="list-style-type: none"> <li>Remove and refit the feeder 1 tray</li> </ul>	Test sheet feeder sensor OP1	P20 pins 1,2,3	Sensor OP1
E31 Sheet feeder 2 removed	<ul style="list-style-type: none"> <li>Remove and refit the feeder 2 tray</li> </ul>	Test sheet feeder sensor OP2	P19 pins 4,5,6	Sensor OP2

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Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E32 Insert feeder removed	<ul style="list-style-type: none"> <li>Remove and refit the insert feeder tray</li> </ul>	Test insert feeder sensor S12	P24 pins 8,9	Sensor S12
E33 Envelope feeder removed	<ul style="list-style-type: none"> <li>Remove and refit the envelope feeder</li> </ul>	Test envelope feeder interlock OP15	P14 pins 4,5,6	Sensor OP15
E34 fold plate 1 removed	<ul style="list-style-type: none"> <li>Remove and refit the fold plate 1</li> </ul>	Test fold plate 1 interlock S6	P29 pins 10,11,12,13	Interlock S6
E35 fold plate 2 removed	<ul style="list-style-type: none"> <li>Remove and refit the fold plate 2</li> </ul>	Test fold plate 2 interlock S7	P17 pins 10,11,12,13	Interlock S7
E36 Collation cover open	<ul style="list-style-type: none"> <li>Close collation cover</li> </ul>	Test cover interlock S5	P20 pins 15,16,17,18	Interlock S5
E37 Envelope flapper cover open	<ul style="list-style-type: none"> <li>Close flapper cover firmly down</li> </ul>	Test flapper interlock S8	P14 pins 7,8,9,10	Interlock S8
E38 Inverter door open	<ul style="list-style-type: none"> <li>Close inverter door</li> </ul>	Test inverter door interlock S10	P36 pins 10,11,12,13	Interlock S10
E39 Moistener cover open	<ul style="list-style-type: none"> <li>Close moistener cover</li> </ul>	Test moistener cover interlock S9	P36 pins 15,16,17,18	Interlock S9
E40 Multiple covers/doors open	<ul style="list-style-type: none"> <li>Check all covers/doors are closed</li> </ul>	Test chain of interlocks S9,S10,S6,S5,S7,S11,S8		Interlocks S5, S6, S7, S8, S9, S10, S11
E41 Finger stops not set	<ul style="list-style-type: none"> <li>Check for any material in the insertion area</li> </ul>	Test Q station end stop Test Q station motor M10 Test encoder Check the Q station lead screw for binding	P37 pins 1,2 P35 pins 4,5,6	Motor M10 Encoder
E42 Low water	<ul style="list-style-type: none"> <li>Add water to the reservoir</li> </ul>	Test water sensor S13	P35 pins 15,16	Sensor S13
E43 EPROM error	<ul style="list-style-type: none"> <li>Switch the machine off/on</li> <li>If the error is still there call service</li> </ul>	Check for 5v LED on PCB main logic		Replace PCB

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Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E44 Feeder 1 separator switch error	<ul style="list-style-type: none"> <li>Check the daily mail switch is properly positioned.</li> <li>Check job set up</li> </ul>	Visually check that the daily mail lever is not broken or cracked. Test manual feed OP3	P23 pins 1,2,3	Replace OP3
E46 Feeder 1 manual feed time out	<ul style="list-style-type: none"> <li>Adjust the sheet feeder side guides alignment by a 1/4 turn.</li> </ul>	Test out of paper sensor OP9	P20 pins 19,20,21	Replace OP9
E50 Envelope not flapped	<ul style="list-style-type: none"> <li>Check correct orientation of the envelope</li> <li>Check flapper unit shut properly.</li> </ul>	Check for binds on the flapper blade Check for damage or wear on flapper blade.		Replace flapper blade.
E53 Half fold not set	<ul style="list-style-type: none"> <li>Remove fold plate 1 check for jammed material</li> </ul>	Check bearing position Check for bind on the lead screw. Test half motor M8 Test encoder Test home position sensor OP13 Test half fold sensor OP8 and OP7.	P16 pins 1,2 P16 pins 3,4,5 OP13 P29 pins 6,7,8 OP8 P16 pins 10,11,12 OP7 P16 pins 6,7,8	Replace M8 Encoder Replace sensors OP7 Replace OP8 or OP13
E54 Envelope lead sensor blocked	<ul style="list-style-type: none"> <li>Check display for jam symbol</li> <li>Press clear deck button and check stacker for left over material</li> <li>Visually check flapper unit for jammed material</li> </ul>	Test sensor S2	P35 pins 11,12	Replace sensor S2
E55 AC motor Error	<ul style="list-style-type: none"> <li>Turn the machine off and on</li> <li>Call service</li> <li>Check cover/doors are closed</li> </ul>	Check for bind on bearings Check and adjust belt tension Test chain of interlocks S9,S10,S6,S5,S7,S11,S8		Interlocks S5, S6, S7, S8, S9, S10, S11
E56 Sheet feeder 1 fail to feed	<ul style="list-style-type: none"> <li>Check the daily mail switch is properly positioned.</li> <li>Adjust the sheet feeder side guides alignment by a 1/4 turn.</li> <li>Check that the material is not sticking together. Aerate stack and reload</li> </ul>	Check the condition of the separator roller and pad.  Test the condition of the Sheet feeder motor M1  Test Encoder	P21 pins 1,2  P20 pins 4,5,6	Replace the separator roller and pad. Replace motor M1  Encoder

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Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E57 Sheet Feeder 2 fail to feed	<ul style="list-style-type: none"> <li>Adjust the sheet feeder side guides alignment by a 1/4 turn.</li> <li>Check that the material is not stuck together. Aerate stack and reload.</li> </ul>	<p>Check the condition of the separator roller and pad.</p> <p>Test the condition of the Sheet feeder motor M2</p> <p>Test Encoder</p>	<p>P18 pins 1,2</p> <p>P19 pins 1,2,3</p>	<p>Replace the separator roller and pad.</p> <p>Replace motor M2</p> <p>Encoder</p>
E58 Insert Feeder Fail to feed	<ul style="list-style-type: none"> <li>Adjust the insert feeder side guides alignment by a 1/4 turn.</li> <li>Check the position of the wedge and adjust if necessary</li> <li>Adjust the separator lever and the stone shield</li> </ul>	<p>Check the material is within spec.</p> <p>Check the condition of the separator and pre feed rollers.</p> <p>Test insert motor M3</p> <p>Test Encoder</p>	<p>P27 pins 1,2</p> <p>P24 pins 1,2,3</p>	<p>Replace separator pad</p> <p>Replace the pre feed rollers and or separator roller.</p> <p>Replace insert motor M3</p> <p>Encoder</p>
E59 Envelope feeder failed to feed	<ul style="list-style-type: none"> <li>Adjust the envelope feeder side guides alignment by a 1/2 turn.</li> <li>Poor envelope quality</li> <li>Check the position of the wedge and adjust if necessary.</li> </ul>	<p>Check the material is within spec.</p> <p>Height of pad.</p> <p>Check the condition of the separator and pre feed rollers.</p> <p>Test out of paper sensor OP12</p> <p>Check the mechanical operation of the pre feed roller clutch.</p> <p>Test envelope feed motor M9</p> <p>Test encoder</p>	<p>P14 pins 20,21,22</p> <p>P15 pins 1,2</p> <p>P14 pins 14,15,16</p>	<p>Separator roller and pad</p> <p>Replace sensor OP12</p> <p>Pre feed roller clutch.</p> <p>Envelope feed motor M9</p> <p>Encoder</p>
E60 Stream feed on sheet feeder 1	<ul style="list-style-type: none"> <li>Check that the material is not stuck together. Aerate stack and reload.</li> <li>Check alignment of the side guides.</li> <li>Check the daily mail switch is properly positioned.</li> <li>Press trial piece to re-calibrate the machine</li> </ul>	<p>Check the material is within spec.</p> <p>Check the condition of the separator pad and roller.</p>		<p>Separator roller and pad.</p>



## 7 • Service Menu & Troubleshooting

Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E61 Stream feed on sheet feeder 2	<ul style="list-style-type: none"> <li>Check that the material is not sticking together. Aerate stack and reload.</li> <li>Check alignment of the side guides.</li> <li>Press trial piece to re-calibrate the machine</li> </ul>	<p>Check the material is within spec.</p> <p>Check the condition of the separator pad and roller.</p>		Separator roller and pad.
E62 Stream feed on insert feeder	<ul style="list-style-type: none"> <li>Check that the material is not sticking together. Aerate stack and reload.</li> <li>Check separation setting.</li> <li>Check alignment of the side guides.</li> <li>Press trial piece to re-calibrate</li> </ul>	<p>Check the material is within spec.</p> <p>Check condition of the pre feed rollers.</p> <p>Check separator rollers and stone.</p>		<p>Pre feed rollers</p> <p>Separator rollers and stone</p>
E63 Multiple tray empty	<ul style="list-style-type: none"> <li>Check and Reload all trays and feeders</li> </ul>	Test all out of paper sensors		
E64 AC handcrank cover open	<ul style="list-style-type: none"> <li>Close AC handcrank cover</li> </ul>	<p>Visually check closing of door</p> <p>Check door interlock switch S11</p>	P14 pins 23,24,25,26	Interlock switch S11
E65 Invalid Interrupt	<ul style="list-style-type: none"> <li>Turn the machine off and on</li> </ul>	Check logic PCB led's		Logic PCB
E66 Stack overflow	<ul style="list-style-type: none"> <li>Remove all material from the paper path</li> <li>Turn the machine off and on</li> </ul>	Development code		
No display	<ul style="list-style-type: none"> <li>Is the machine turned on at the mains?</li> <li>Check the fuse in the plug</li> </ul>	<p>Check the fuses in the plug and AC inlet socket</p> <p>Check connection on logic PCB</p> <p>Check LED display on logic PCB</p> <p>Check P38 for 0,5,24v</p> <p>Check high/low readings on the interlocks relays</p>	<p>pin 7 =5vdc logic</p> <p>pins 1,2,8 =24vdc</p> <p>pins 3,4,9,10 =0vdc Ground</p> <p>pins 13,14</p>	<p>Fuses</p> <p>Logic PCB</p> <p>PSU</p> <p>PSU</p>

## 7 • Service Menu & Troubleshooting

Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E72 Envelope Feeder Overloaded (DI425/SI3500 only)	<ul style="list-style-type: none"> <li>Check envelope feeder is not over-filled.</li> </ul>	Check envelope platform upper limit switch IL13 and envelope present sensor PS11.		
E74 System Error Power Down	<ul style="list-style-type: none"> <li>Re-start machine</li> </ul>			
E75 System Error Power Down	<ul style="list-style-type: none"> <li>Re-start machine</li> </ul>			
E81 Bad OMR Marks Spacing	<ul style="list-style-type: none"> <li>Check Sensor is centred over the OMR marks. Wipe sensor to remove dust. Ensure paper is loaded correctly into feeder. Power machine on/off.</li> </ul>	OMR sensor possibly faulty or needs calibrating. Loss of drive.		
E82 No OMR Marks	<ul style="list-style-type: none"> <li>Check Sensor is centred over the OMR marks. Wipe sensor to remove dust. Ensure paper is loaded correctly into feeder. Power machine on/off.</li> </ul>	OMR sensor possibly faulty or needs calibrating.		
E83 Bad OMR Code Length	<ul style="list-style-type: none"> <li>Code type on paper does not match the setup. Example: setup has OMR+ Sequence but paper has OMR + Select Feed + Sequence.</li> </ul>	Check configuration of OMR marks. Possibly using Swiss offset or offset position.		
E84 Bad OMR Code Format	<ul style="list-style-type: none"> <li>A re-timing scan mark is missing. Check material. Example: mark 6 is missing from a 10 mark code.</li> </ul>	OMR sensor possibly faulty or needs calibrating.		
E85 Expected First Sheet of Set	<ul style="list-style-type: none"> <li>The BOC mark (position 4) was present when it was not expected. First page of the set was expected.</li> </ul>	OMR sensor possibly faulty or needs calibrating.		
E86 Not a New Envelope	<ul style="list-style-type: none"> <li>The BOC mark (position 4) was absent when it was expected. Pages other than the first page of the set were expected.</li> </ul>	OMR sensor possibly faulty or needs calibrating.		

## 7 • Service Menu & Troubleshooting

Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E87 OMR Parity Error	<ul style="list-style-type: none"> <li>The code does not have an EVEN number of marks.</li> </ul>	OMR sensor possibly faulty or needs calibrating.		
E88 OMR Sequence Error	<ul style="list-style-type: none"> <li>The sequence number is not sequential with the previous page fed. Sheets are in the wrong order or missing.</li> </ul>	OMR sensor possibly faulty or needs calibrating.		
E89 OMR SF Marks Inconsistent	<ul style="list-style-type: none"> <li>The Selective feed and Autobatch marks at positions 7 to 9 are different to those on the previous sheet of this set</li> </ul>	OMR sensor possibly faulty or needs calibrating.		
E90 OMR SF Not in Use	<ul style="list-style-type: none"> <li>A selective feed mark is present at positions 7 to 8, but the job setup does not include select feed.</li> </ul>	OMR sensor possibly faulty or needs calibrating.		
E91 OMR Set Too Large	<ul style="list-style-type: none"> <li>The set contains too many sheets from the main feeder.</li> </ul>	OMR sensor possibly faulty or needs calibrating.		
E92 OMR End of Batch Ready to Run	<ul style="list-style-type: none"> <li>This indicates that the machine has stopped for "End of Batch". Allows the operator to manually sort the envelopes.</li> </ul>			
E96 Insert Prefeed Roller Stall on Wedge on Last Insert	<ul style="list-style-type: none"> <li>Check side guides separation from pre-feed rollers.</li> </ul>	Check wedge is moving freely and that pre-feed rollers are in contact with last insert.		
E111 OMR Emergency Stop				
E113 VPS Disconnected	<ul style="list-style-type: none"> <li>Check RS232 cable is connected to the VPS and inserter. Check power cord, power off/ power on.</li> </ul>	Check internal RS232 cable to PCB.		
E114 VPS FULL	<ul style="list-style-type: none"> <li>Remove mail from the stacker, then press start.</li> </ul>	Check sensor is working on VPS.		

## 7 • Service Menu & Troubleshooting

Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E115 VPS Nearly Full	<ul style="list-style-type: none"> <li>Remove mail from the stacker, then press start.</li> </ul>			
E116 VPS Cam Error	<ul style="list-style-type: none"> <li>Pull VPS to un-docked position. Remove all mail and check for obstructions. Dock VPS, press reset button on VPS. Press start.</li> </ul>	Possible motor bind. Check and reset.		
E117 VPS Entry Jam	<ul style="list-style-type: none"> <li>Pull VPS to un-docked position. Remove any material from VPS entry area, then re-dock VPS. Press start.</li> </ul>	Check exit switch S4 and entry sensor on the VPS.		
E118 VPS Undocked	<ul style="list-style-type: none"> <li>Remove VPS to un-docked position. Remove any material from VPS entry area. Press clear deck. Re-dock VPS.</li> </ul>	Check docking switch on VPS.		
E119 MMI Throttle Active	<ul style="list-style-type: none"> <li>Power on/ Power off. Reference to E120.</li> </ul>			
E120 MMI Throttle Timeout	<ul style="list-style-type: none"> <li>If there are 4 mail pieces on the mailing deck, refer to franking machine. Is divert lever set to MMI position correct?</li> </ul>			
E123 VPS Docked	<ul style="list-style-type: none"> <li>Move VPS to un-docked position. Remove any material from VPS entry area. Press clear deck. Re-dock VPS.</li> </ul>	Check docking switch on VPS.		
E124 MMI Disconnected	<ul style="list-style-type: none"> <li>Press start and see if this re-installs the MMI. Check RS232 cable. Check DIN connector between inserter and mailing machine. Power off/ Power on.</li> </ul>	Check internal RS232 cable to PCB.		
E125 Remove Material from MMI	<ul style="list-style-type: none"> <li>Press clear deck and re-try running job. Stop inserting and franking machine and wind inserting machine by hand to remove any material.</li> </ul>	Check drive belt/ gear from inserter to MMI.		

## 7 • Service Menu & Troubleshooting

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Error Codes and fault	Operator Check List	Service Diagnostic	Connector and Logic Test	Replacement Parts
E126 Processor Reset	<ul style="list-style-type: none"><li>Power off/ Power on.</li></ul>			

## **7 • Service Menu & Troubleshooting**

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# 8 • Preventive Maintenance

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## 8.1 GENERAL INFORMATION

Servicing has been broken down into service procedures at 100,000 cycle and 200,000 cycle intervals, so that the following items are either checked, cleaned or replaced.

Reflective and DDD sensors must be cleaned on every 'E' call.

Before attempting to service this equipment discuss with the operator any operational problems.

## 8.2 THE 100K SERVICE

1. Check that all material falls within specification.
2. Check operation of equipment.
3. Check operation of safety interlocks.
4. Listen for any unusual noises.
5. Visually check for any loose or detached parts.
6. Remove Feeder Trays, Fold Plates and Insert Feeder assembly.
7. Remove all covers, front and rear.
8. Check the condition of all belts.
9. Insert Feeder: Check/clean Separator Roller.  
Check/clean Carriage Rollers (upper and lower).  
Clean 'out of paper' and 'carriage complete' sensors.  
Lightly lubricate shaft cam with grease
10. Fold Rollers: Clean all Fold Rollers (you must remove carriage complete assembly side brackets first for easy access).  
Clean fold plate sensors.
11. Sheet Feeders Check/clean Separator Roller.  
Check/clean Separator Pad.  
Check/clean Lower Collation Rollers.  
Clean all 'out of paper' and interlock sensors.
12. Sealer Change, or rotate the felt.  
Check/clean Transport Rollers.  
Check/clean Sealer Brush.
13. Inverter/Exit Check/clean Sealer Rollers (driven and idler).  
Check/clean Exit Rollers (driven and idler).
14. Envelope feed Check/clean Separator Pad.  
Check Prefeed Rollers.
15. Clean all sensors with a damp cloth or use a brush/air duster to remove any surface dust.
16. Lightly lubricate the following with grease: Manual Advance gear spindles  
Cam on Insert Envelope Drive
17. Clean bobbins and rollers with Isopropyl Alcohol or equivalent cleaning agent.
18. Reassemble machine and test.

## 8 • Preventive Maintenance

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### 8.3 THE 200K SERVICE

1. Check that all material falls within specification.
2. Check operation of equipment.
3. Check operation of safety interlocks.
4. Listen for any unusual noises.
5. Visually check for any loose or detached parts.
6. Remove Feeder Trays, Fold Plates and Insert Feeder assembly.
7. Remove all covers, front and rear.
8. Check the condition of all belts.
9. Insert Feeder: Replace Cleaning Pad Assembly.  
Replace Separator Roller.  
Check/clean Carriage Rollers (upper and lower).  
Clean 'out of paper' and 'carriage complete' sensors.  
Replace Pre-Feed Rollers.  
Lightly lubricate shaft cam with grease.
10. Fold Rollers: Clean all Fold Rollers (you must remove carriage complete assembly side brackets first for easier access).  
Clean fold plate sensors.
11. Sheet Feeders: Replace Separator Roller.  
Replace Separator Pad.  
Check/clean Lower Collation Rollers.  
Clean all 'out of paper' and interlock sensors.
12. Sealer: Replace Sealer Felt.  
Check/clean Transport Rollers.  
Check/clean Sealer Brush.
13. Inverter/Exit: Check/clean Sealer Rollers (driven and idler).  
Check/clean Exit Rollers (driven and idler).
14. Envelope feed: Replace Separator Pad.  
Replace Pre-Feed Rollers.
15. Clean all sensors with a damp cloth or use a brush/air duster to remove any surface dust.
16. Lightly lubricate the following with grease:      Handcrank gear spindles  
   Cam on Insert Envelope Drive
17. Clean bobbins and rollers with Isopropyl Alcohol or equivalent cleaning agent.
18. Reassemble machine and test.



# 9 • Installation

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## 9.1 UNPACK AND CHECK

1. Unpack and check machine for damage.
2. Locate the machine on a strong, level table adjacent to a power socket. Allow clearance for the stacker to locate over the right-hand edge of the table.
3. Remove the tywrap from the Q Station.
4. Level Machine by using the adjustable feet and then retighten lock nuts.  
**Note:** Take into account the thickness of the stacker.
5. Fit the stacker under the right-hand end of machine.
6. Fit all feeder trays and fold plates. Ensure the wedges are fitted to the correct trays.
7. Fix Overlays and Badges supplied for machine.
8. Fill the sealer Water Bottle.
9. Connect the power lead and turn power ON.
10. Check all functions of the machine.
11. Make sure Envelope offset and Flapper Blade are set correctly.  
**Note:** Envelopes to feed through the machine centrally – adjust if necessary (Reference adjustment 5.15 in this manual).
12. For OMR machines, use the OMR Scanning Template and Sensitivity Setup Sheet (SDT316) to calibrate machine.  
OMR Machines will possibly need T1 Clutch Release time to be adjusted, depending on the type of envelope flap used, to seal correctly.

When you are satisfied that the machine is working properly, carry out the Operator/Supervisor training on the following page...

## 9 • Installation

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### 9.2 OPERATOR TRAINING

1. Show and explain the machine layout and the functions of all the blue knobs, including:
  - Daily Mail (Manual Feed) Lever
  - Feeder Trays
  - Fold plates
  - Stacker
2. Switch the machine on. Explain the functions of the Display Panel, its symbols and buttons.
3. Show how to select a pre-programmed job. Explain that the machine will always request a trial piece when first selecting a job and that the trial piece calibrates the Double Document Detect sensors.
4. Explain how to load material into all feeders. Show paper orientation symbols for loading material. Explain the 1/4 or 1/2 turn adjustment of side guides to allow clearance.
5. Run the job. Cover running a trial piece/checking contents and using batch mode. Explain operation of Start/Stop. Show how to load material while the machine is running.
6. Finishing a job. Show operator how to check all material has ejected out of machine.
7. Material stoppage. Explain stoppage location symbols and how to use the “Clear Deck” button and Manual Advance Knob. Show removal of feeder and fold trays to gain access to jam areas.
8. Operator “Hands on”. Allow the operator to select a new job and adjust all feeders.
9. Call avoidance. Explain use of the trouble shooting and operating guide.
10. Operator maintenance. Show how to fill Water Bottle.

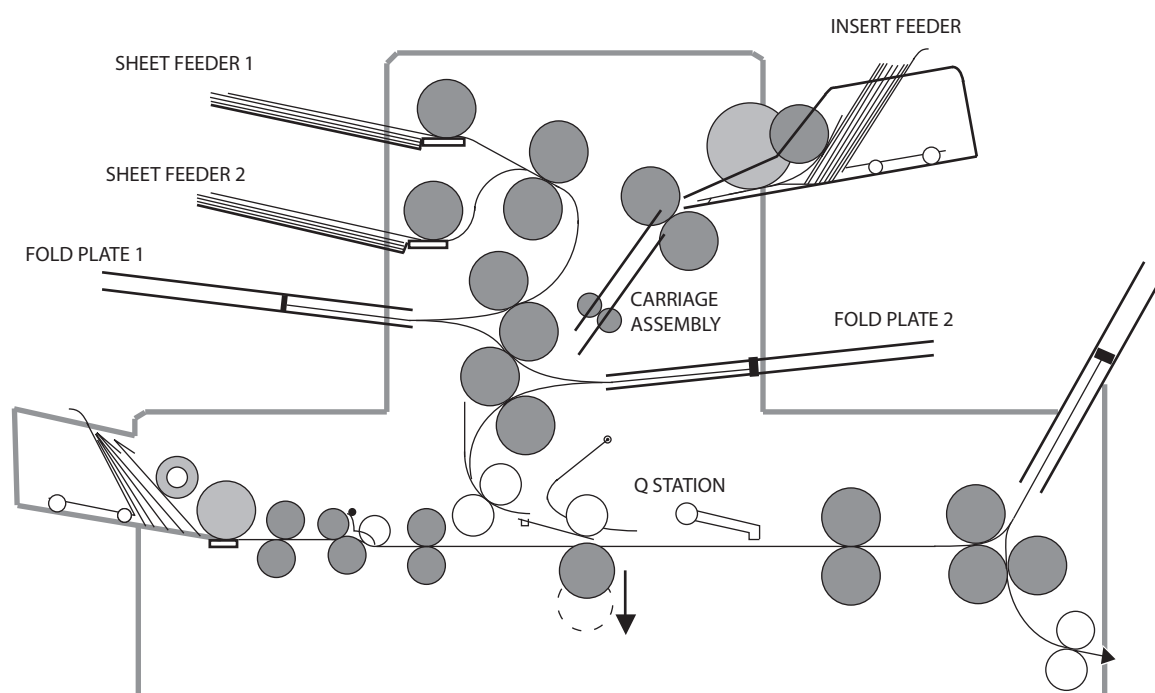
### 9.3 SUPERVISOR TRAINING

Carry out the entire Operator Training plus...

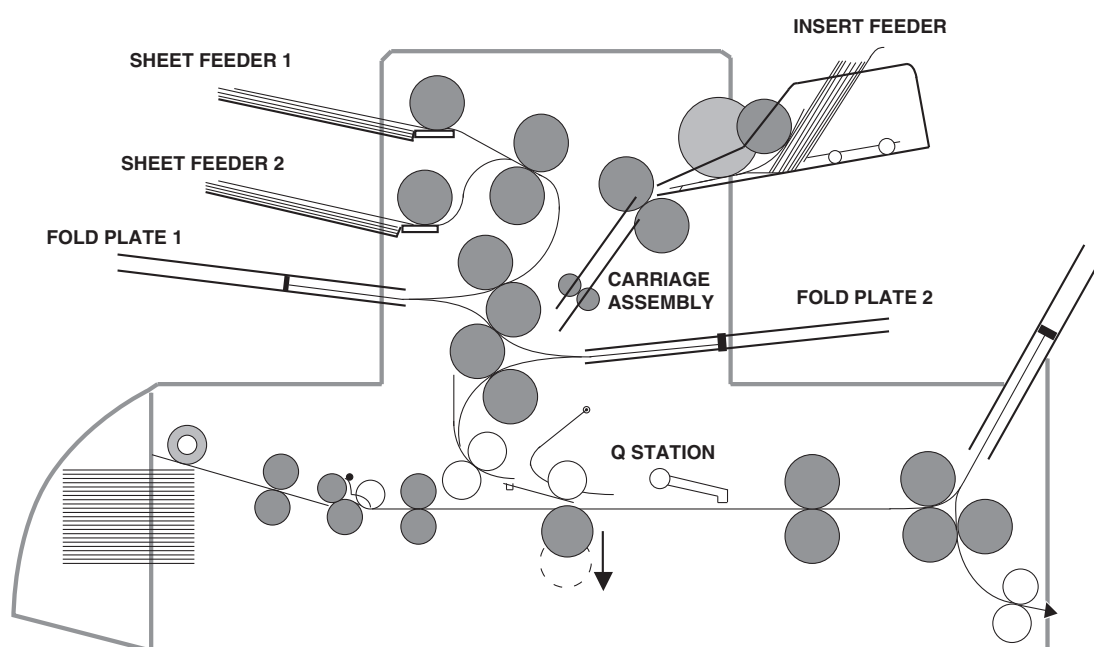
1. Explain programming of jobs. Make sure you explain entering, deleting, modifying jobs and fine tuning of fold panels. Explain the Default Job and, if necessary, set it to the customer's preferred application.
2. Supervisor “Hands on”. Get the supervisor to program a job and run the machine.

# 10 • Diagrams

## 10.1 FLOW DIAGRAMS



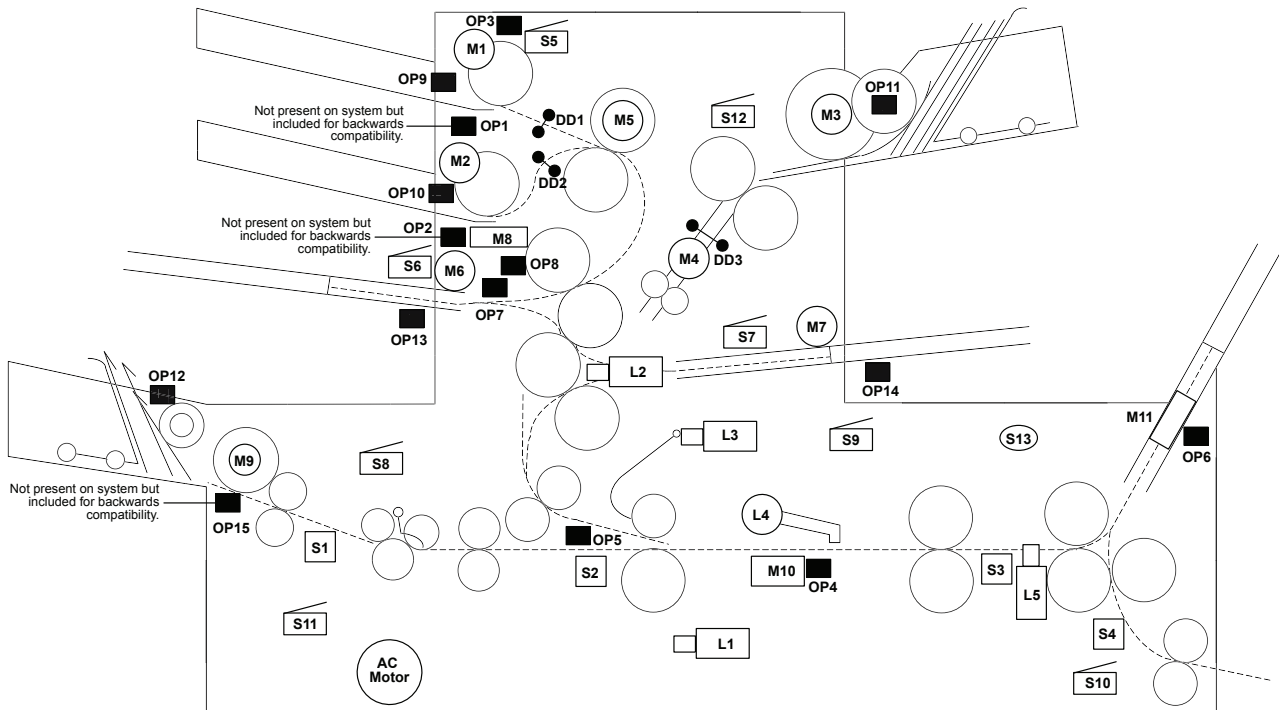
*Flow Diagram - DI380/SI3300*



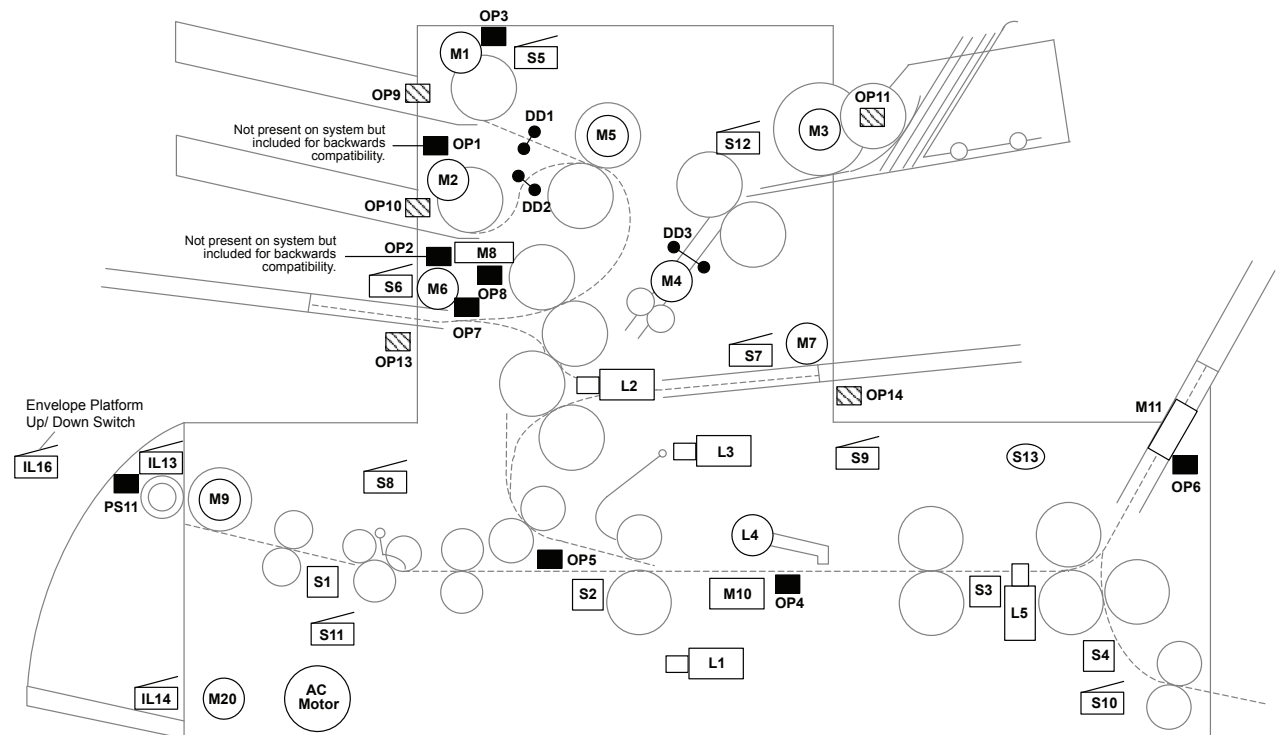
*Flow Diagram - DI425/SI3500*

## 10 • Diagrams

### 10.2 COMPONENT LOCATIONS



#### DI380/SI3300



#### DI425/SI3500

## 10.3 SWITCHES, SENSORS, MOTORS, SOLENOIDS TEST LEVELS

Mechanical Switches		PCB Location	PIN Location	Wires	Open	Closed
Top Cover	S5	P20	15, 16, 17, 18	Black Yellow Blue White	24V (high) 0V (low) 0V (low) 0V (low)	24V (high) 24V (high) 24V (high) 0V (low)
Fold Plate 1 Interlock	S6	P29	10, 11, 12, 13			
Fold Plate 2 Interlock	S7	P17	10, 11, 12, 13			
Flapper Interlock	S8	P14	7, 8, 9, 10			
Moistener Cover	S9	P36	15, 16, 17, 18			
Turner/Inverter Door	S10	P36	11, 12, 13, 14			
Hand Crank Door	S11	P14	23, 24, 25, 26	Yellow White	5V (high) 0V (low)	0V (low) 0V (low)
Insert Feeder Interlock	S12	P24	8, 9			

Barrier Switches		PCB Location	PIN Location	Wires	Blocked	Unblocked
Sheet Feeder 1 Interlock	OP1	P20	1, 2, 3	Wires still present but not in use		
Sheet Feeder 2 Interlock	OP2	P19	4, 5, 6			
Envelope Interlock	OP15	P14	4, 5, 6			
Manual Feed	OP3	P23	1, 2, 3	Yellow White Black	5V (high) 0V (low) 0V (low)	5V (high) 5V (high) 0V (low)
Q Station Home	OP4	P35	7, 8, 9			
Pivot/Transport Plate	OP5	P14	1, 2, 3			
Inverter Home	OP6	P36	3, 4, 5			
Half Fold On	OP7	P16	10, 11, 12			
Half Fold Off	OP8	P16	6, 7, 8			

Reflective Sensors		PCB Location	PIN Location	Wires	Blocked	Unblocked
Sheet Feeder 1 Paper Empty	OP9	P20	19, 20, 21	Yellow White Black	5V (high) 0V (low) 0V (low)	5V (high) 5V (high) 0V (low)
Sheet Feeder 2 Paper Empty	OP10	P19	12, 13, 14			
Insert Paper Empty	OP11	P24	4, 5, 6			
Envelope Paper Empty	OP12	P14	20, 21, 22			
Fold Plate 1 Home	OP13	P29	6, 7, 8			
Fold Plate 2 Home	OP14	P17	6, 7, 8			

## 10 • Diagrams

Magnetic Reed Switches		PCB Location	PIN Location	Wires	Blocked	Unblocked
Envelope Feed S1	S1	P14	18, 19	Black	0V (low)	0V (low)
				White	0V (low)	5V (high)
Lead Edge	S2	P35	11, 12			
Moistener	S3	P35	2, 3	Yellow	5V (high)	0V (low)
Exit	S4	P36	9, 10	White	0V (low)	0V (low)
Water	S13	P35	15, 16			

Solenoids		PCB Location	PIN Location	Wires	ON	OFF
Insert (Envelope Drive Roller)	L1	P30	1, 2	Blue	24V (high)	24V (high)
				Blue	0V (low)	24V (high)
Hold Down	L2	P31	1, 2	Blue	24V (high)	24V (high)
				Blue	0V (low)	24V (high)
Shoe Horn	L3	P34	1, 2	White	24V (high)	24V (high)
				White	0V (low)	24V (high)
Finger Solenoid	L4	P33	1, 2	Orange	24V (high)	24V (high)
				Grey	0V (low)	24V (high)
Moistener	L5	P32	1, 2	Yellow	24V (high)	24V (high)
				Yellow	0V (low)	24V (high)

Motors DC		PCB Location	PIN Location	Wires	ON	OFF
Sheet Feeder 1	M1	P21	1, 2	Orange	24V (high)	24V (high)
Sheet Feeder 2	M2	P18	1, 2	Grey	10V (low)	24V (high)
Insert Collation	M4	P25	1, 2			
Insert Pre Feed	M3	P27	1, 2	Orange	10V (low)	24V (high)
Collation	M5	P22	1, 2	Grey	24V (high)	24V (high)
Envelope Feed	M9	P15	1, 2			
Fold Plate 1	M6	P17	1, 2			
Fold Plate 2	M7	P29	1, 2	Orange	Pin 1 and 2 values change to 10V depending on direction of drive	
Half Fold	M8	P16	1, 2	Grey		
Q Station	M10	P37	1, 2			
Inverter	M11	P36	1, 2			

Through Beam Sensor		PCB Location	PIN Location	Wires	Blocked	Unblocked
Envelope Present Sensor	PS11	P40	1, 3, 5	Yellow	5V (high)	5V (high)
Envelope Platform Upper Limit	IL13	P40	8, 10, 12	White	0V (low)	5V (high)
Envelope Platform Lower Limit	IL14	P40	2, 4, 6	Black	0V (low)	0V (low)

Safe seal clutch		PCB Location	PIN Location	Wires	
Sealer clutch	CL1	P39	1, 2	Orange	24V
				Brown	0V

Momentary Switch		PCB Location	PIN Location	Wires	
Envelope Platform Up / Down	IL16	P40	7, 9	Black	24V
				Black	0V

Motor Stepper		PCB Location	PIN Location
Envelope Platform	M20	P41	1, 2, 3, 4

Power Supply Unit		PCB Location	PIN Location
24 Volts		P38	1
24 Volts			2
0 Volts GND			3
0 Volts GND			4
5 Volts Power Good (Reset Signal)			5
5 Volts Logic			7
24 Volts			8
0 Volts GND			9
0 Volts GND			10
5 Volts SSR1 (Motor Start)			11
5 Volts SSR2 (Motor Run)			12
12-24 Volts INTLK+ (Relay)			13
0-24 Volts INTLK- (Relay)			14

## 10 • Diagrams

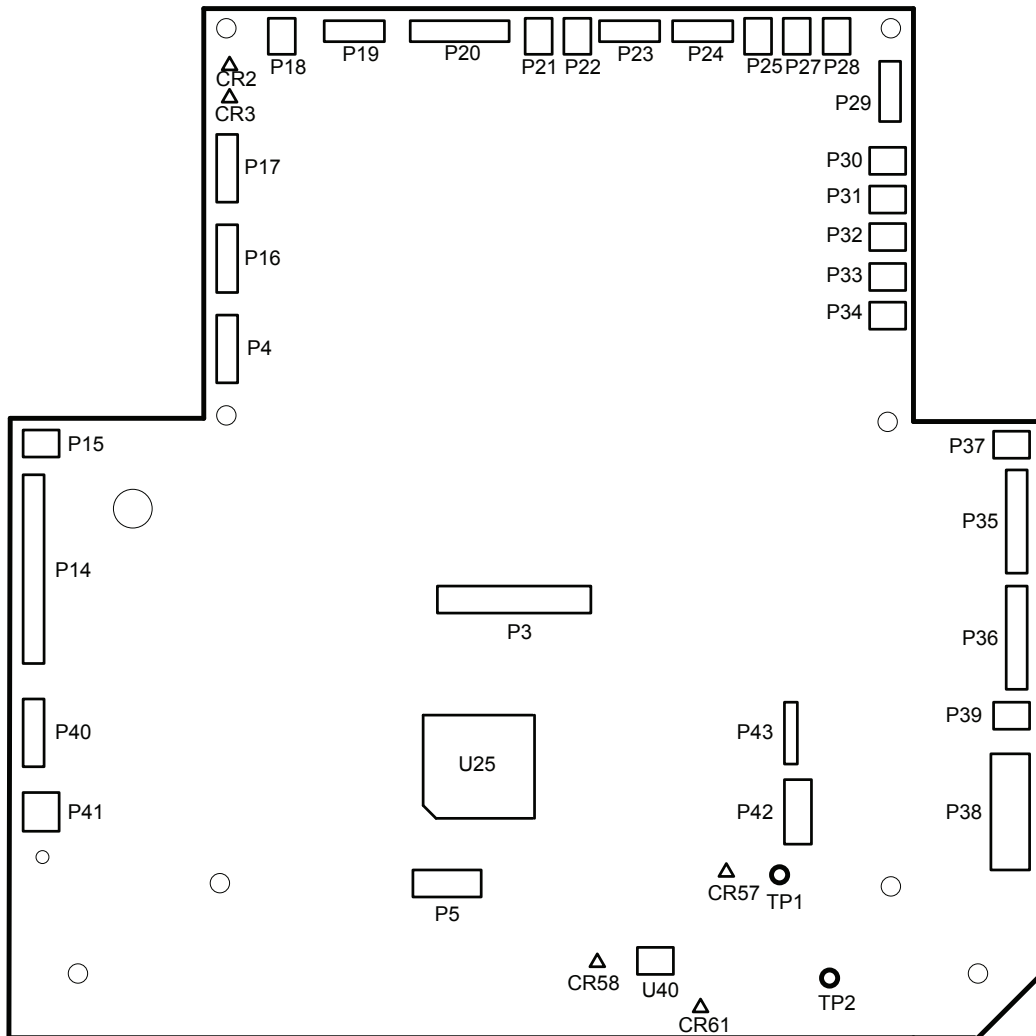
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PCB Test Points	PCB Location
3.3 Volts	TP1
1.2 Volts	TP2

Key	PCB Location
5 Volts Indicator	CR2
24 Volts Indicator	CR3
3.3 Volts Indicator	CR57
Micro Diagnostics Factory Use Only	CR58
FPGA Indicator Flashes if OK	CR61
Software	U25
NVM	U40
Control Panel	P3
RS232	P5
Counter	P28
OMR Sensors	P4
Not Used (Software Diagnostics)	P43
Not Used (Software Diagnostics)	P42

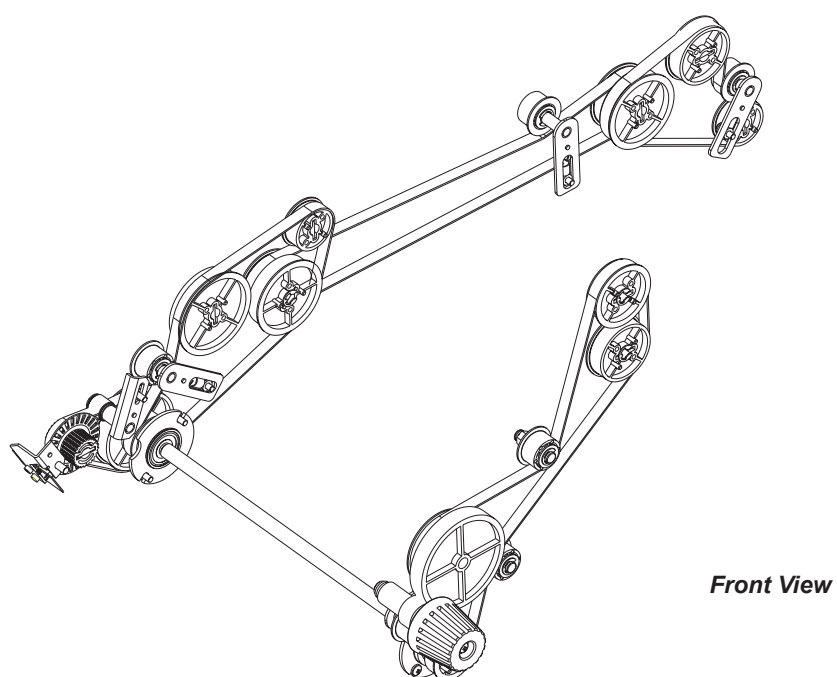
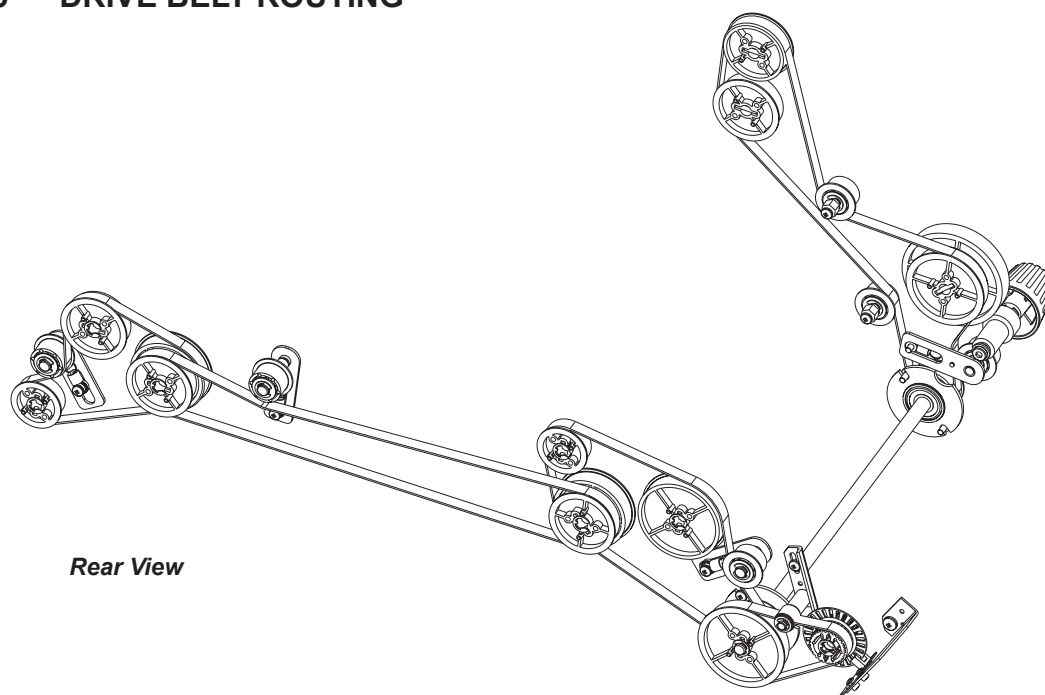


## 10.4 PCB LAYOUT

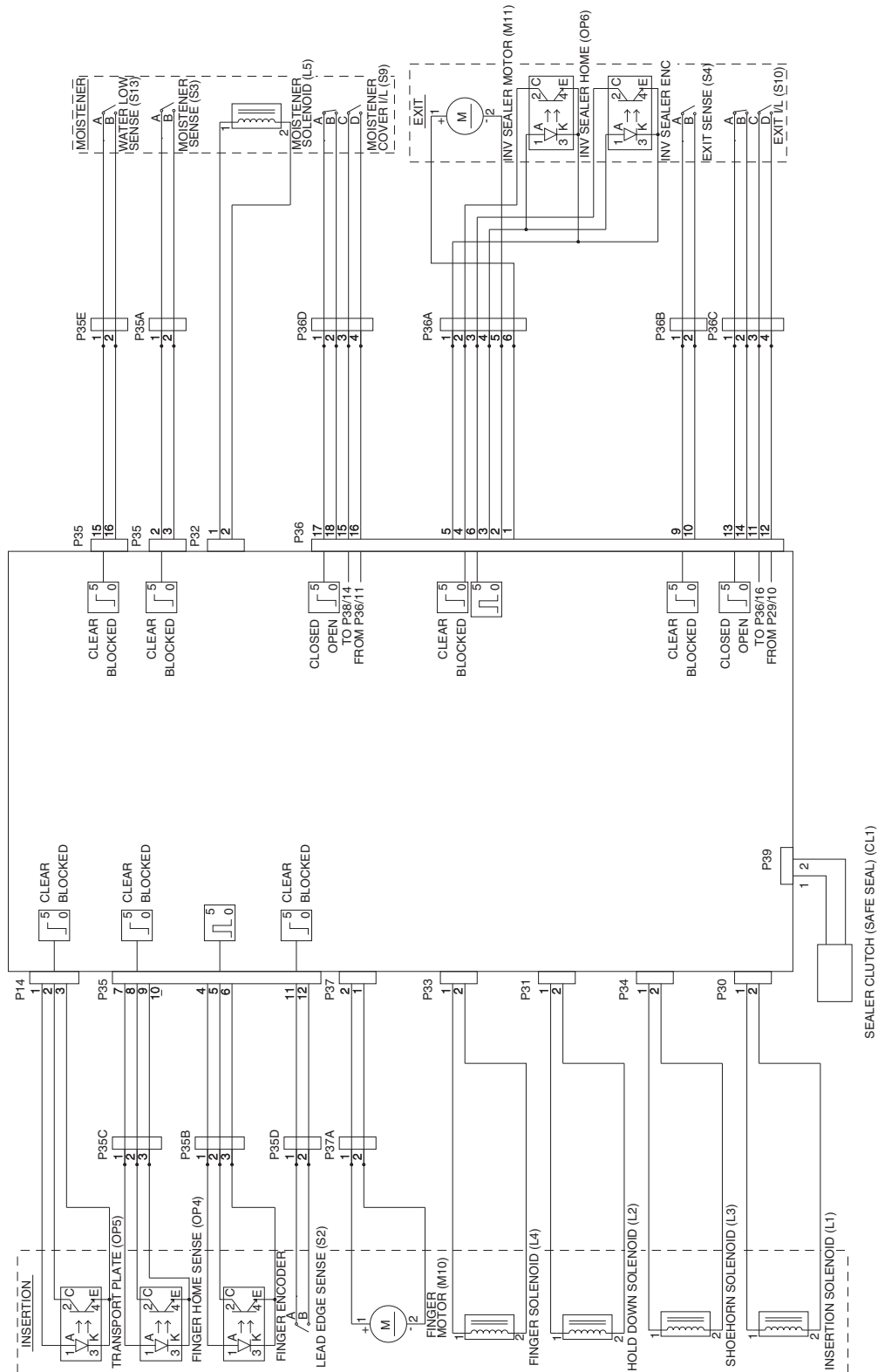


## 10 • Diagrams

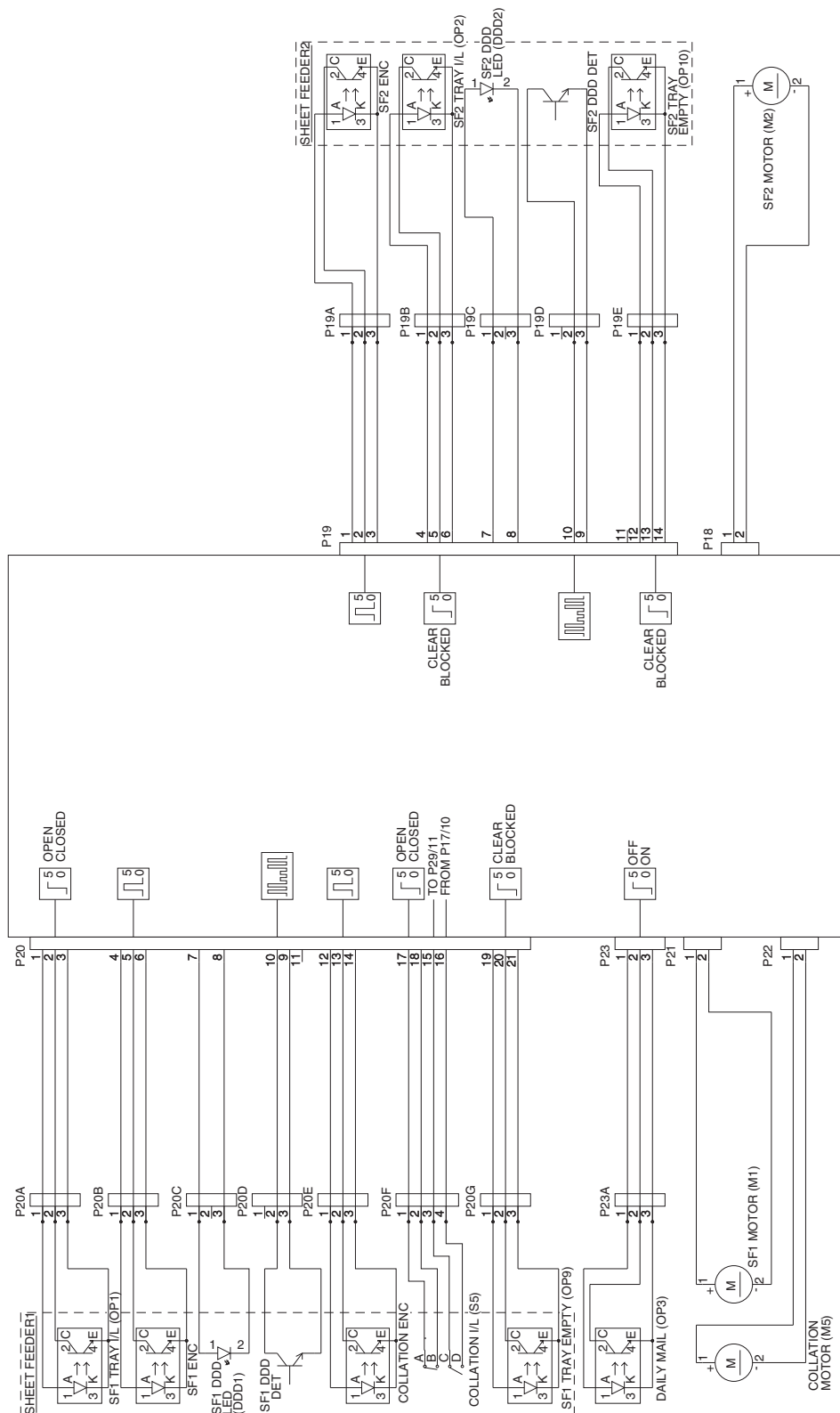
### 10.5 DRIVE BELT ROUTING



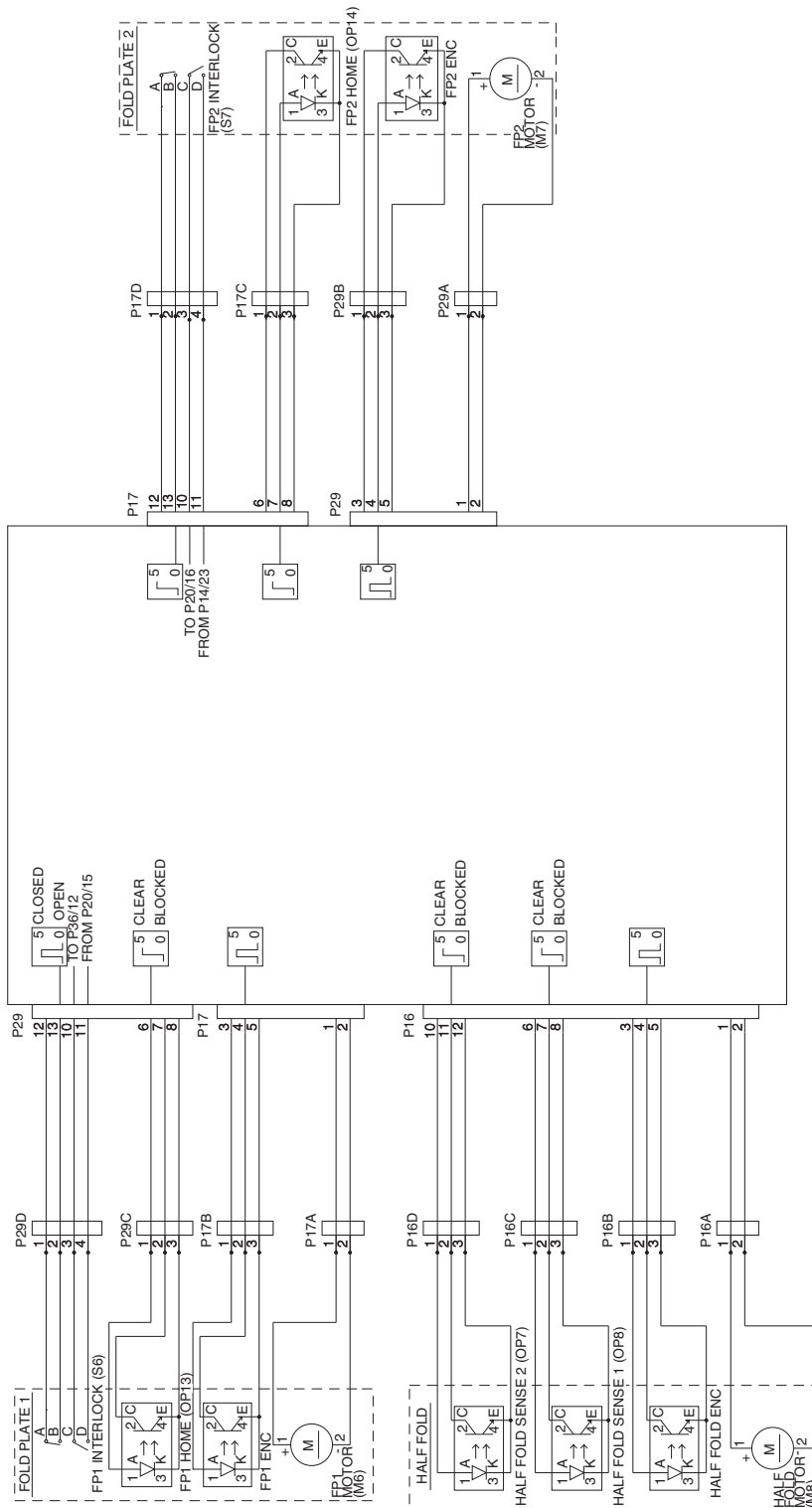
# 10.6 SCHEMATIC - INSERTION/MOISTENER/EXIT AREAS



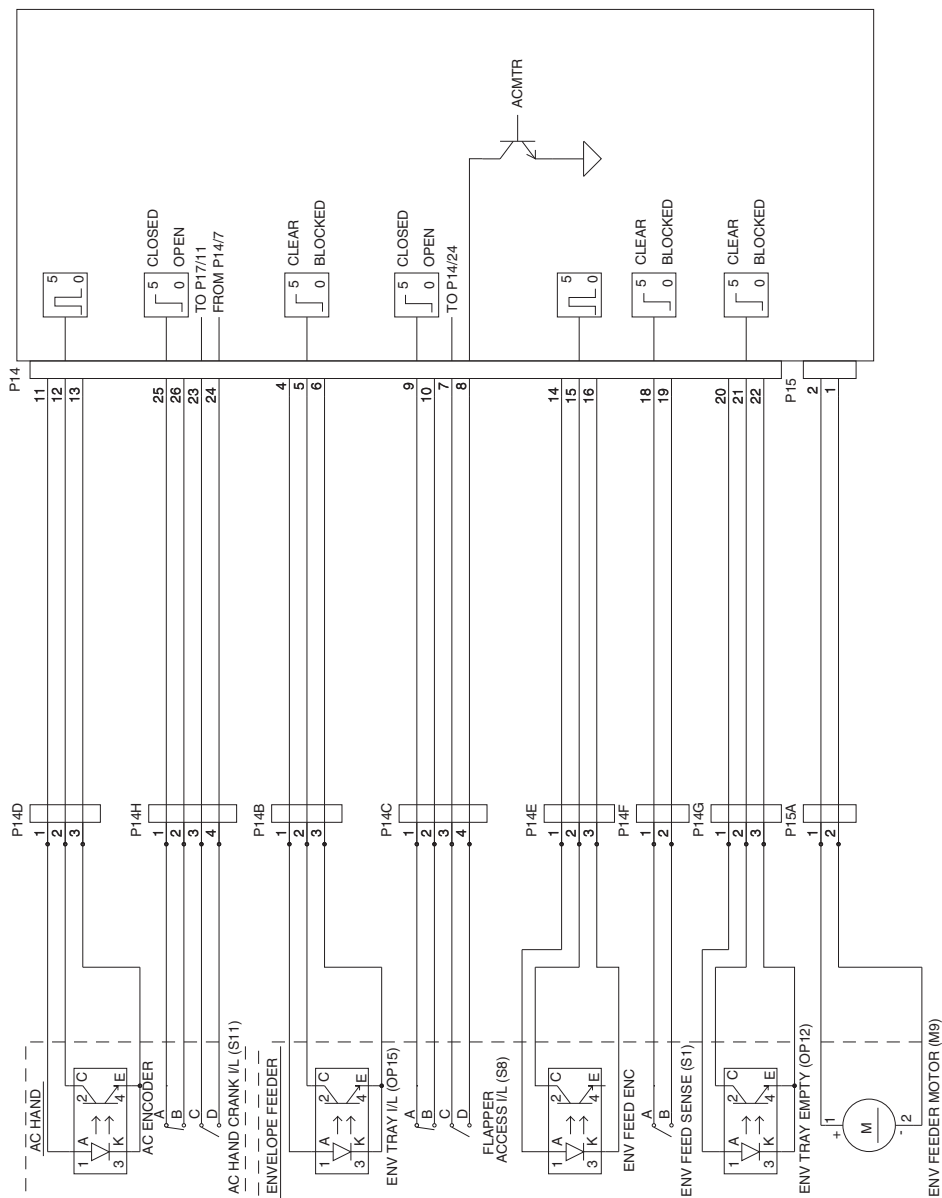
## 10.7 SCHEMATIC - SHEET FEEDERS/COLLATION MOTOR



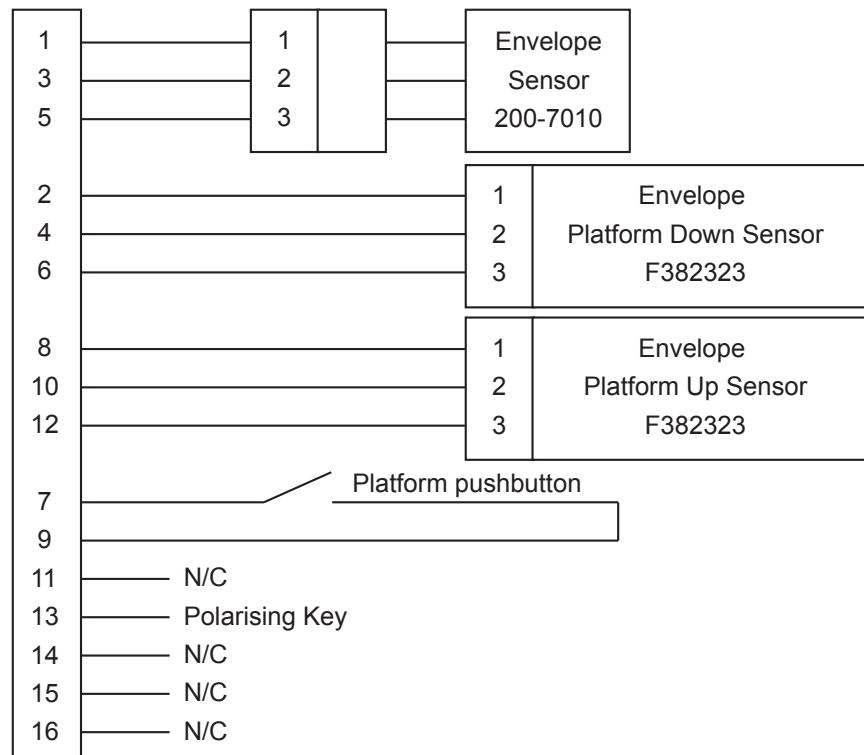
# 10.8 SCHEMATIC - FOLD PLATES/HALF FOLD



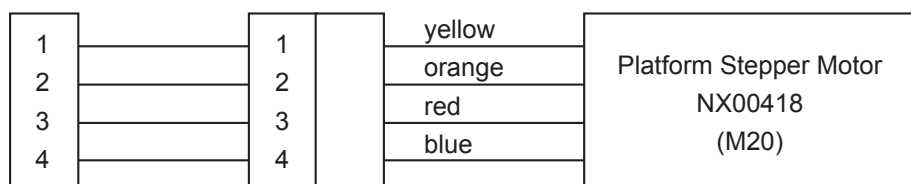
## 10.9 SCHEMATIC - ENVELOPE FEEDER/AC HAND CRANK (MANUAL ADVANCE)



### 10.10 SCHEMATIC - P40 ENVELOPE PLATFORM CONNECTOR (DI425/SI3500)

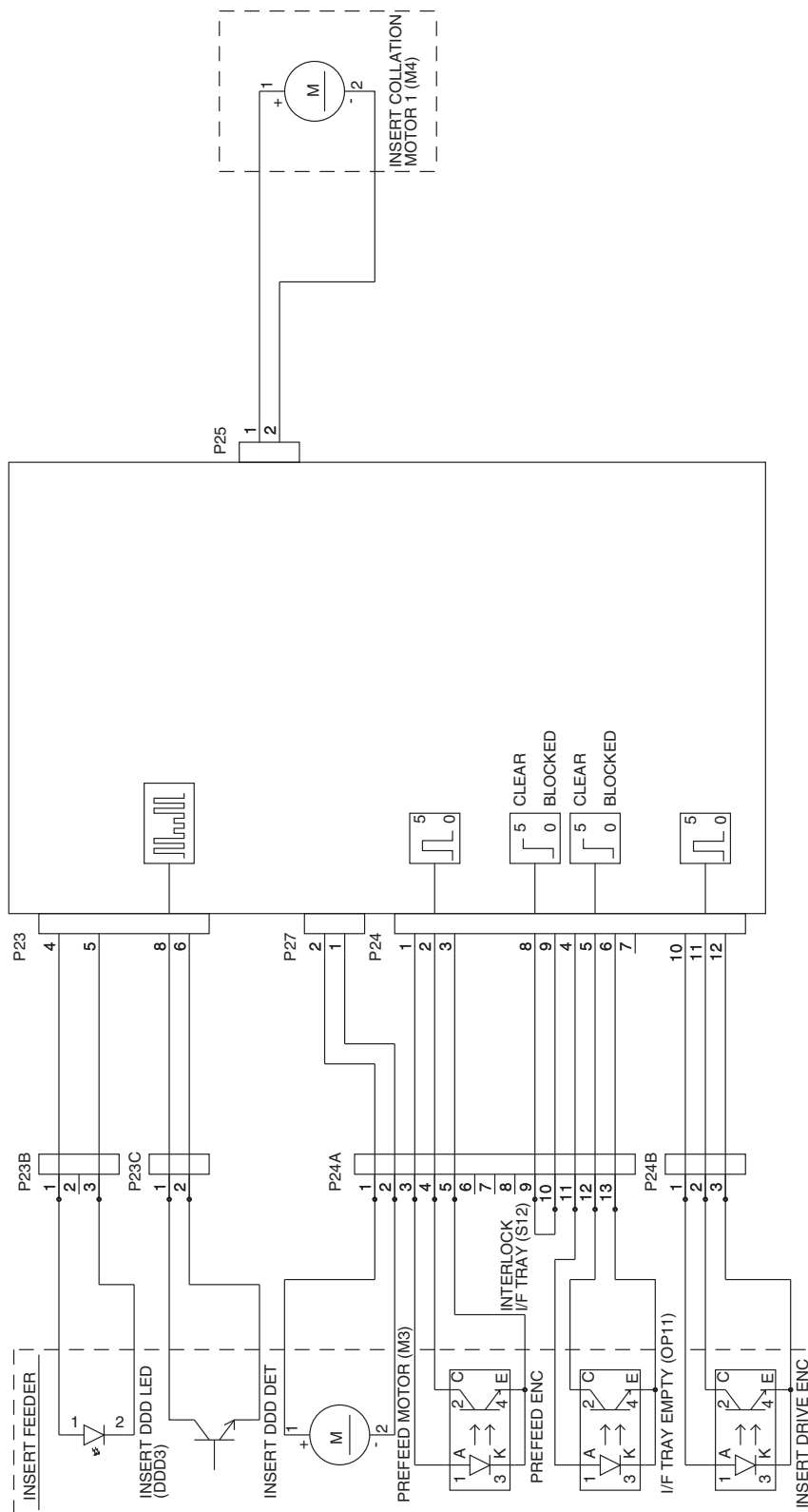


### 10.11 SCHEMATIC - P41 ENVELOPE PLATFORM MOTOR CONNECTOR (DI425/SI3500)



PB 261-2919, Molex 43020-0401 Qty. 1  
PB 085-1070, Molex 43031-0001 Qty. 4

### 10.12 SCHEMATIC - INSERT FEEDER





# 10.13 SCHEMATIC - DISPLAY/PSU

